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A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.

Vol. LI: No. 17. *New York, Thursday, April 27, 1893.* $4.50 a Year, including Postage. Single Copies, Ten Cents.

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Advertising and Subscription Rates " 111

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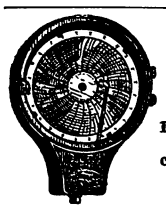
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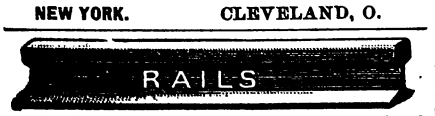
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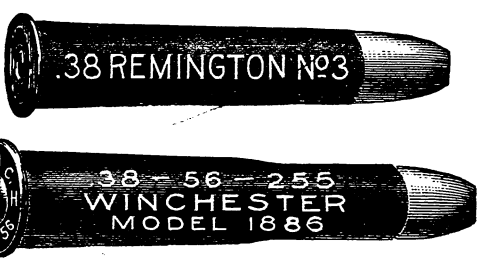
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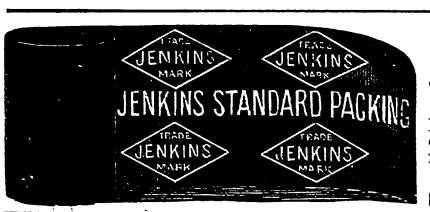
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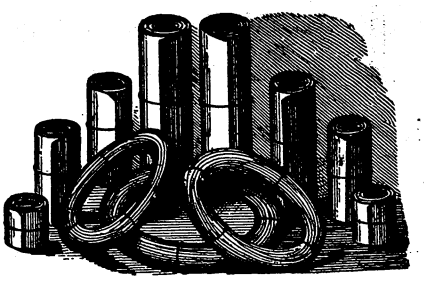
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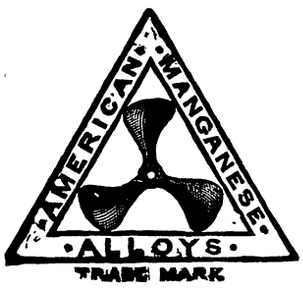
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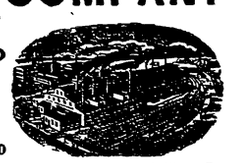
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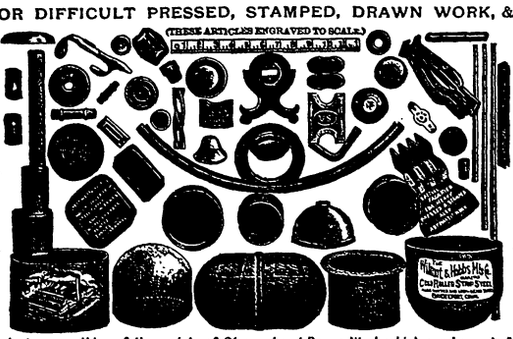


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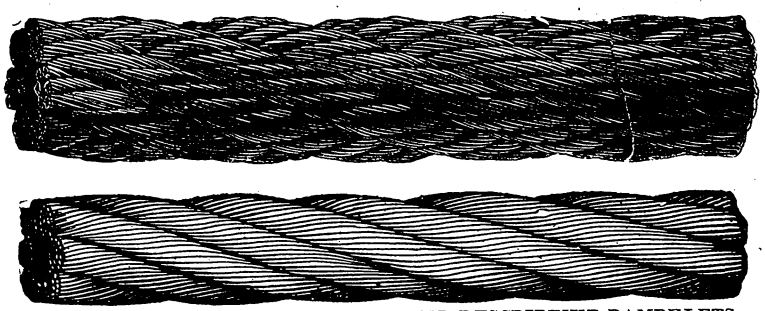
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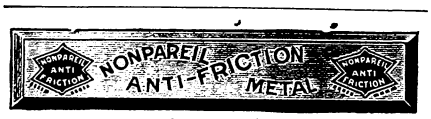
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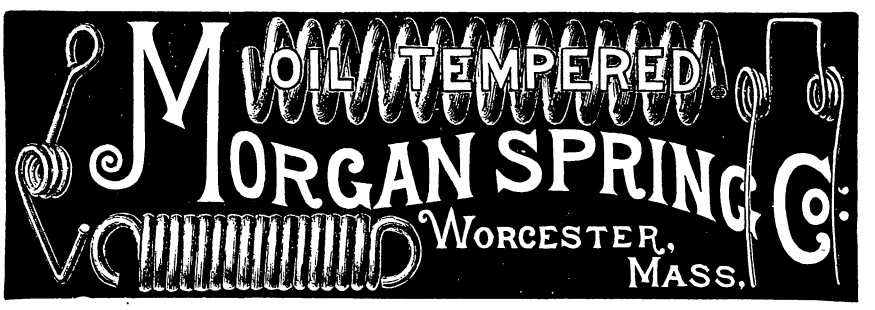
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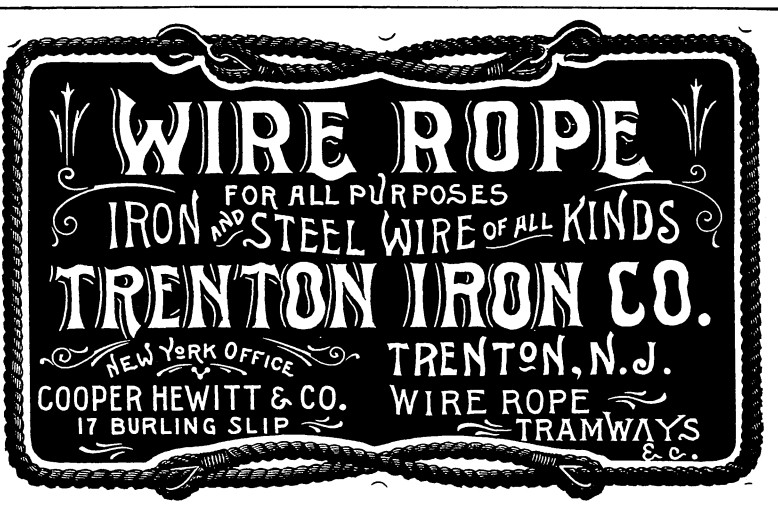
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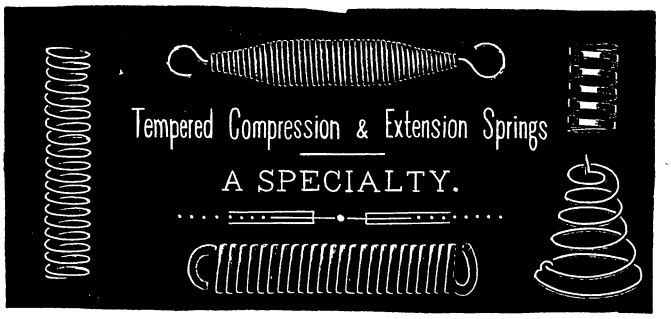


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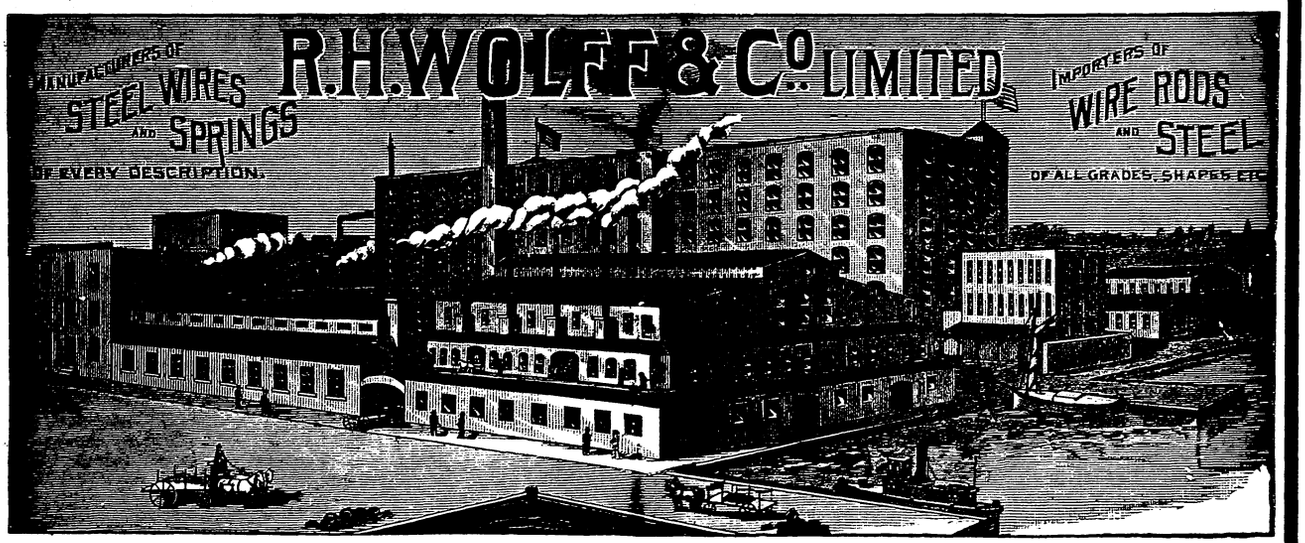
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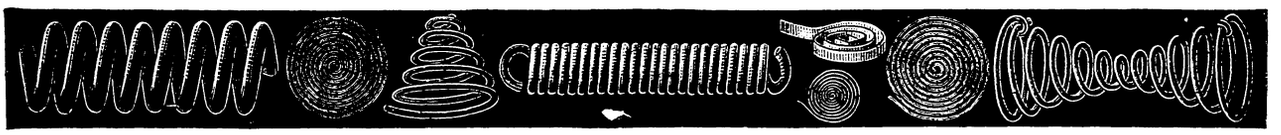
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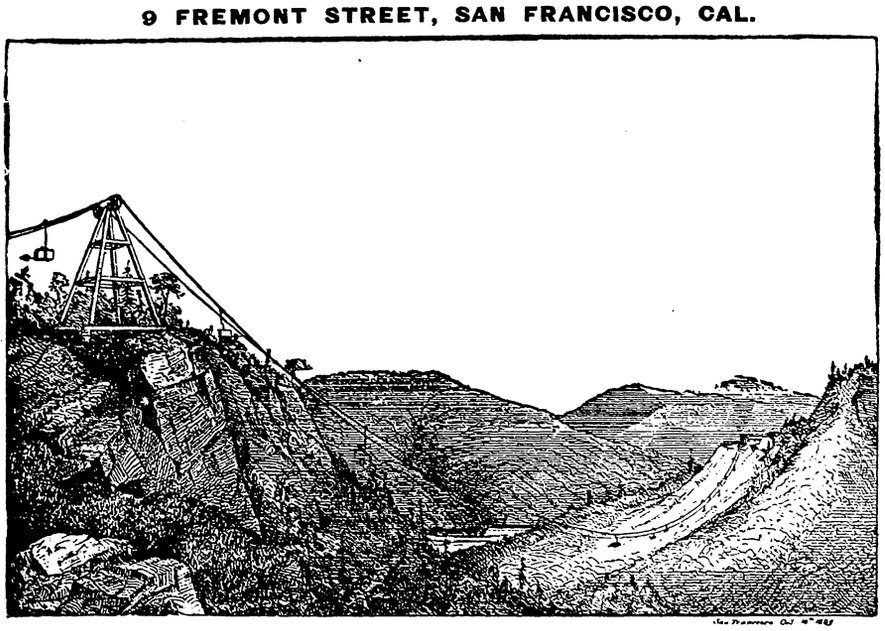
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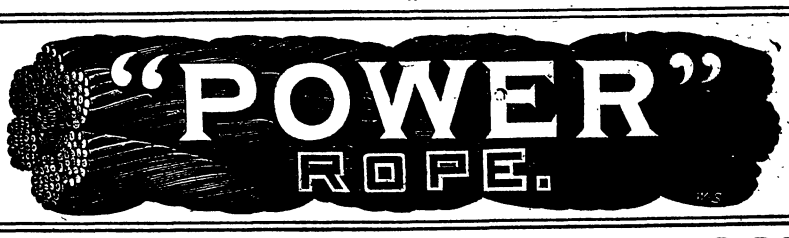
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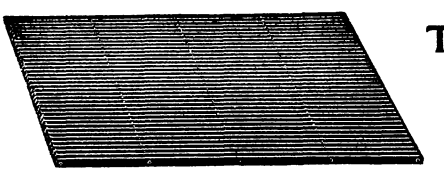
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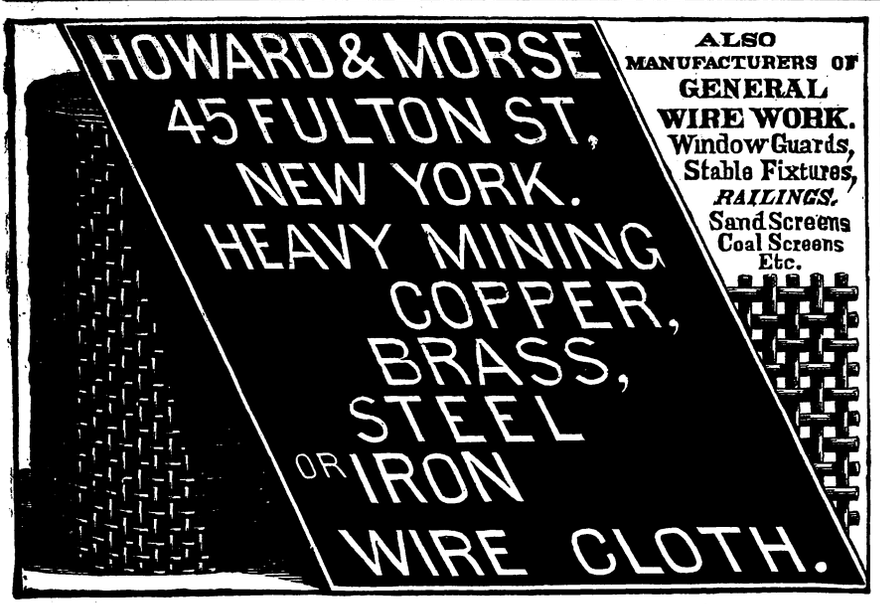
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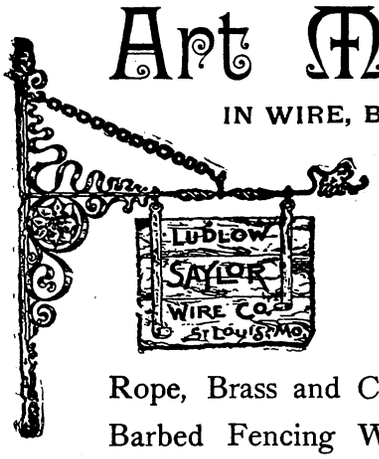
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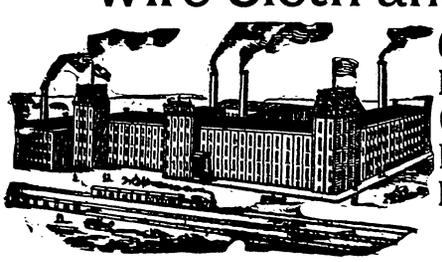
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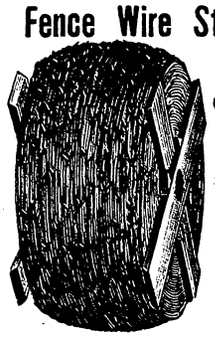
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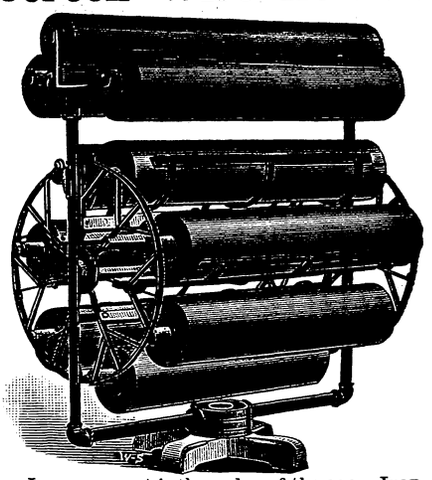


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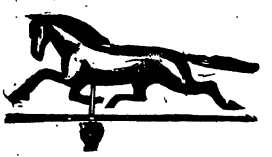
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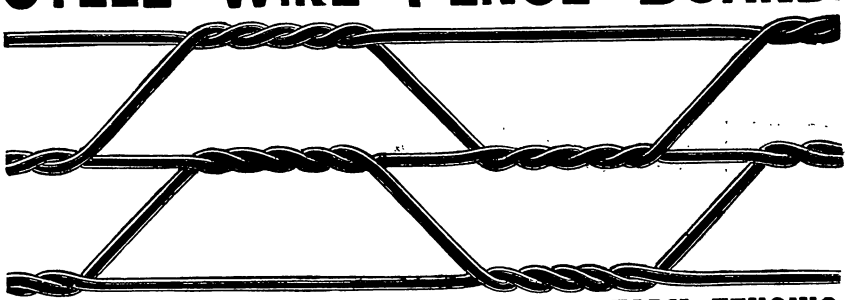

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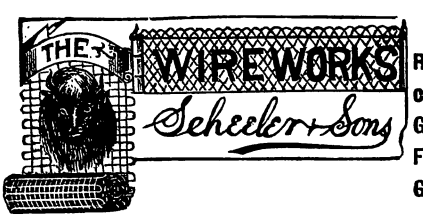


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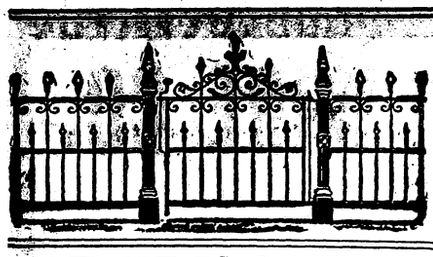
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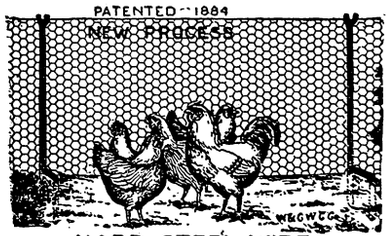
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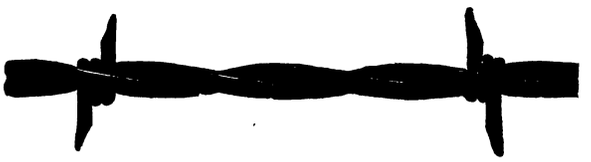
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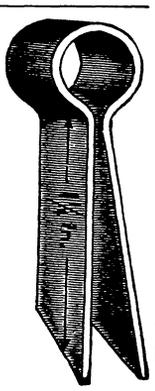
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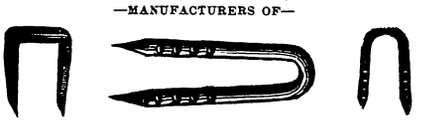
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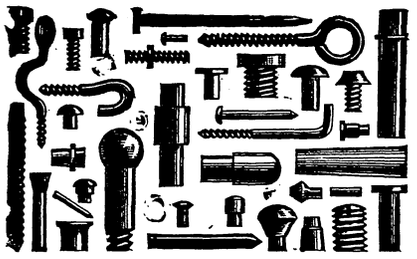
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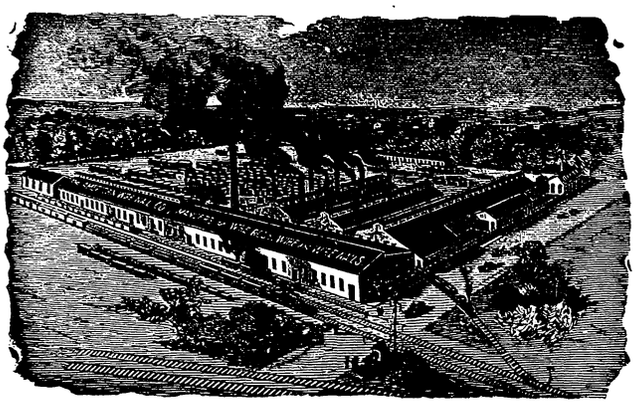


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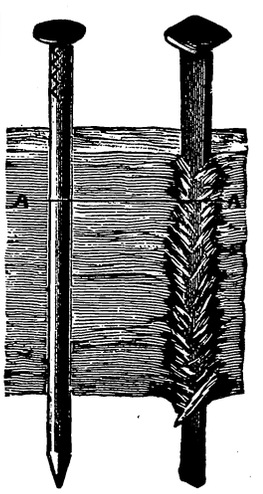
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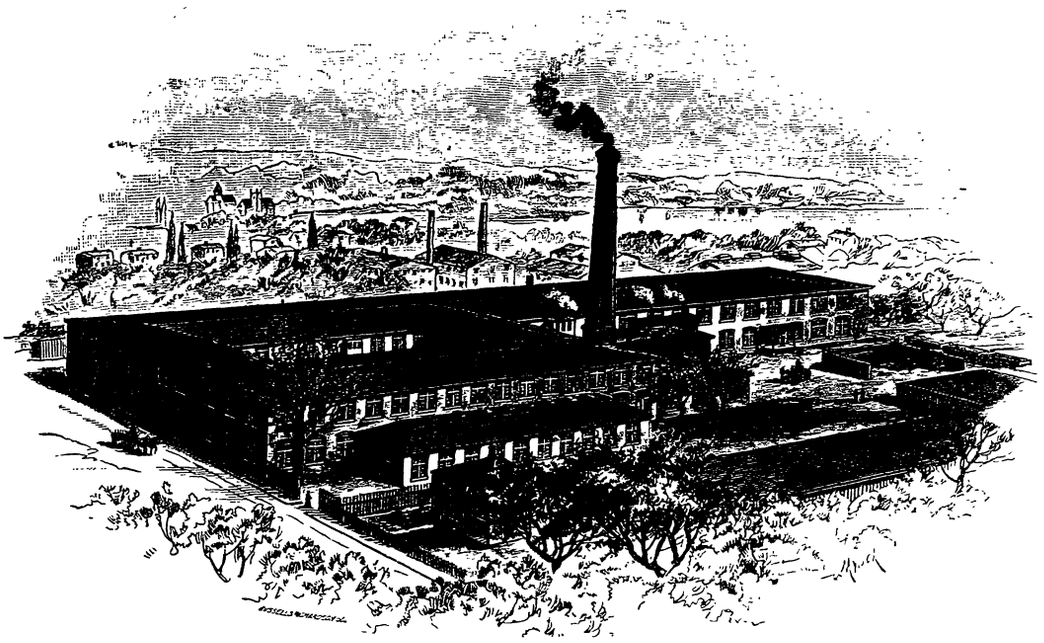
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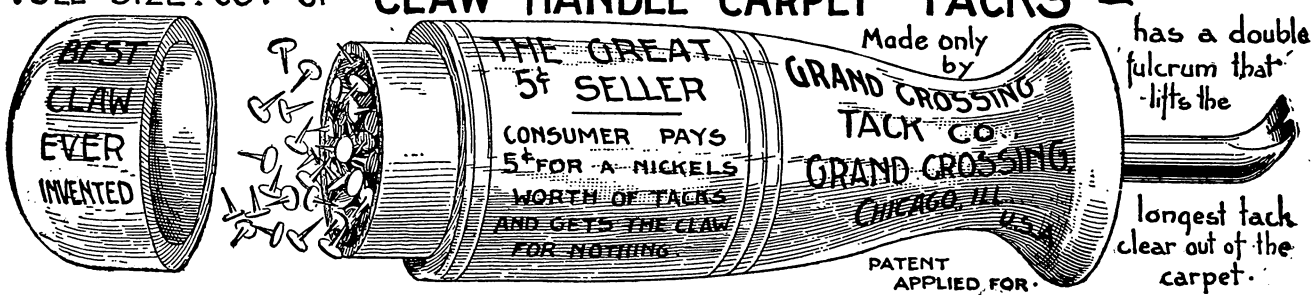
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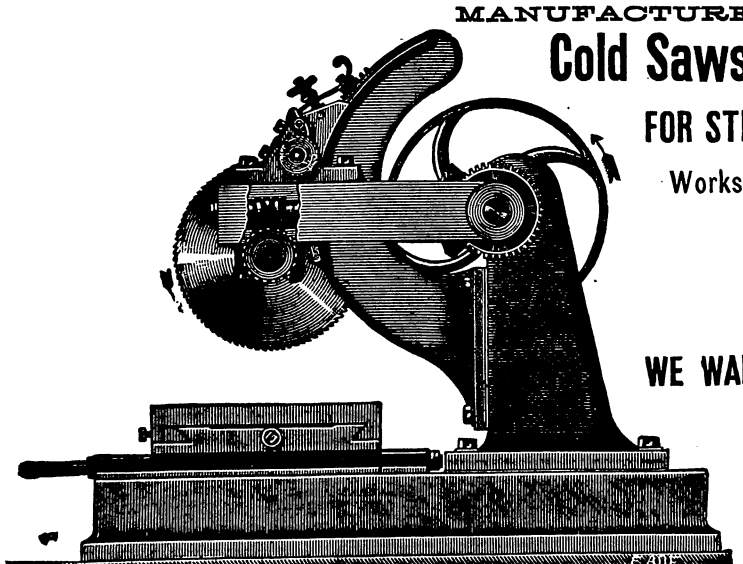
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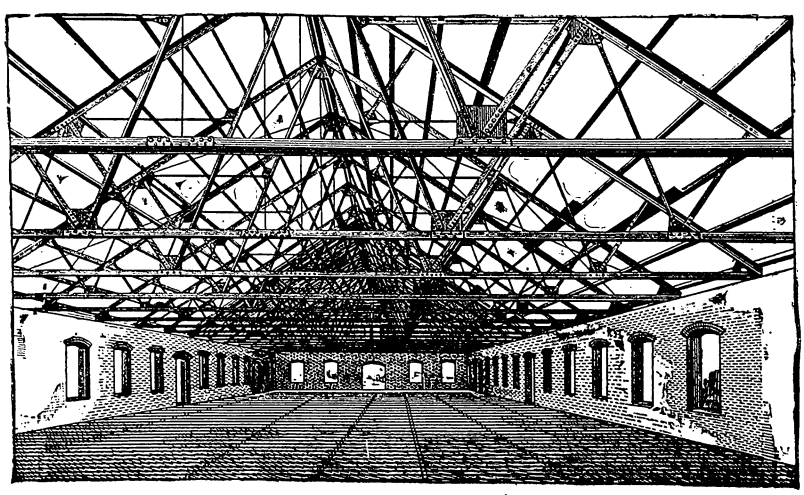
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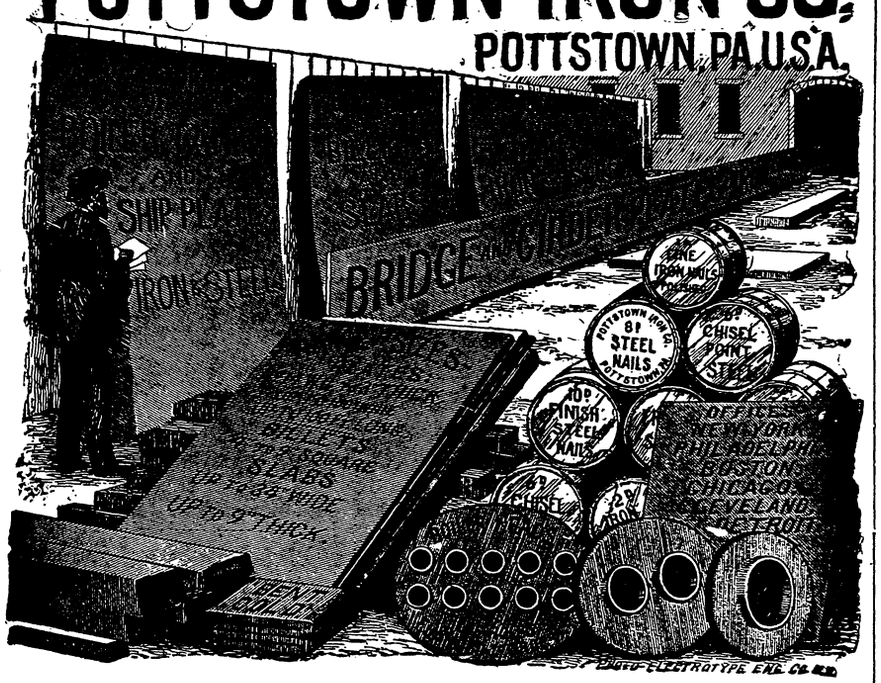
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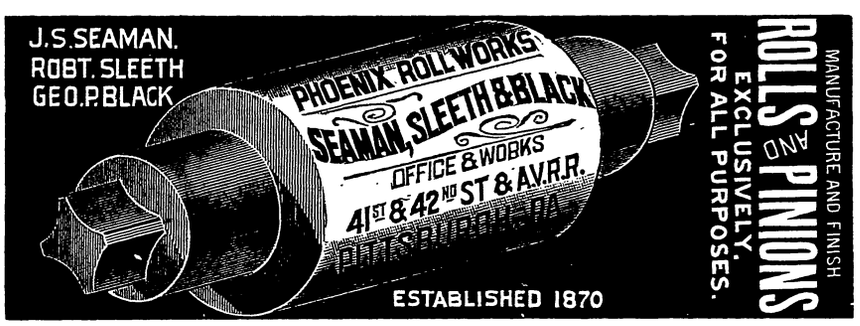
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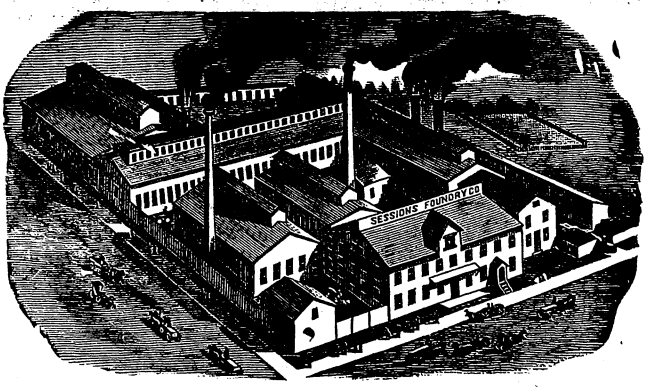
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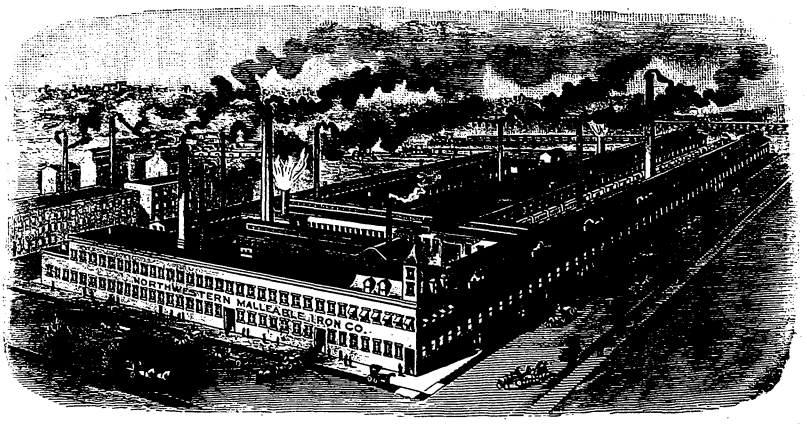
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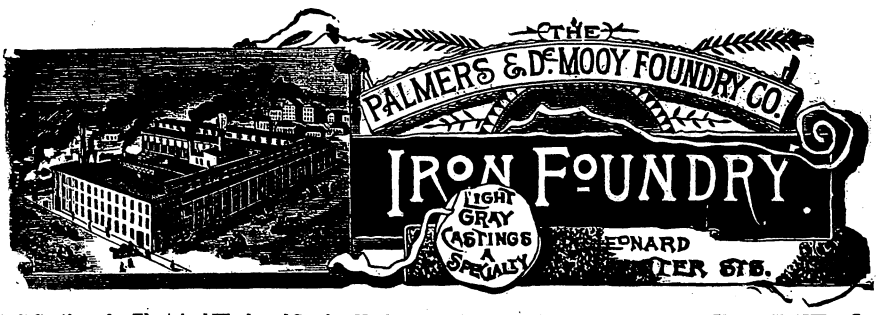
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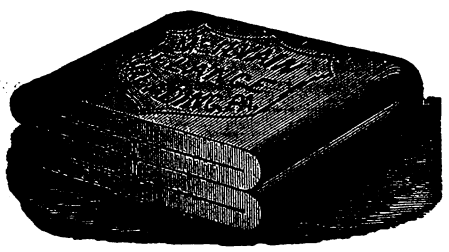
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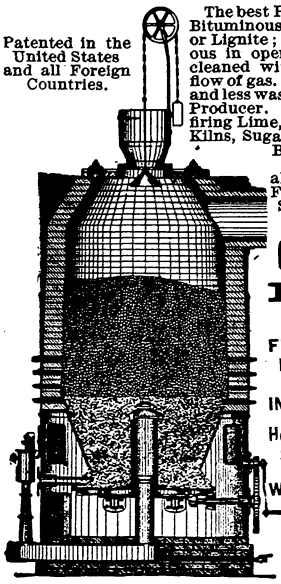
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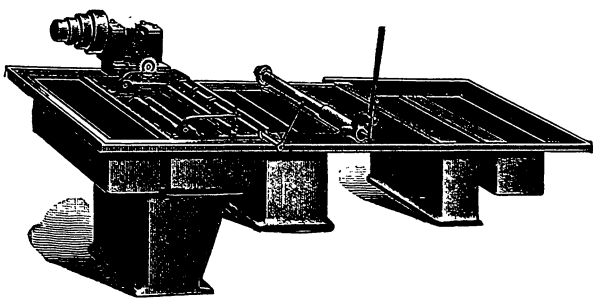
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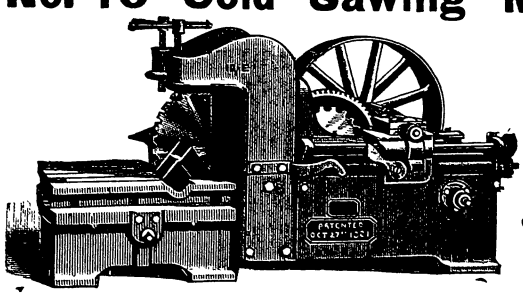


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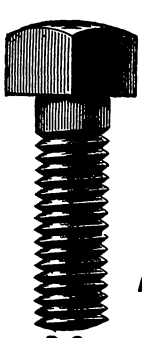
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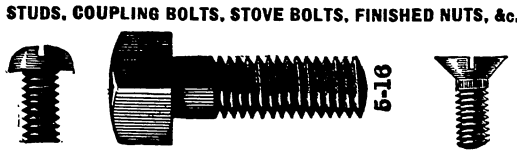
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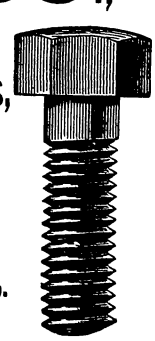


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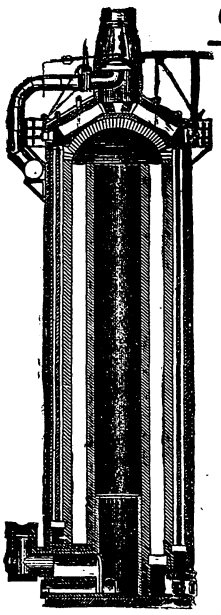
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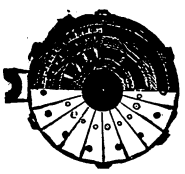
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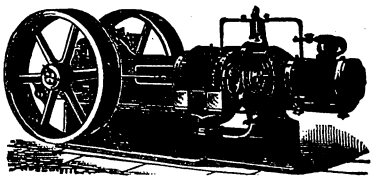
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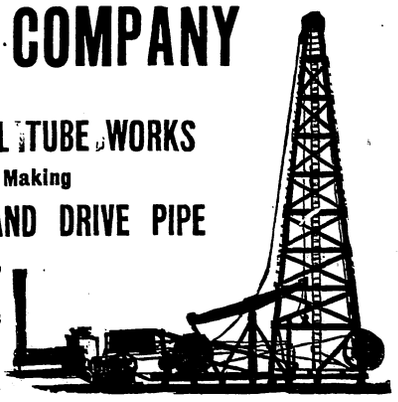
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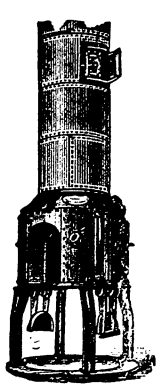
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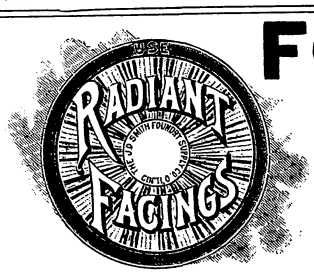
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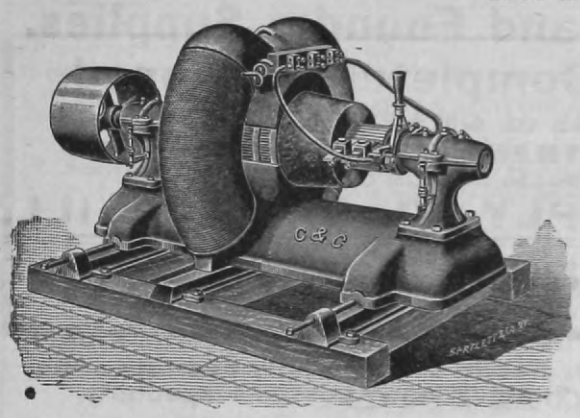
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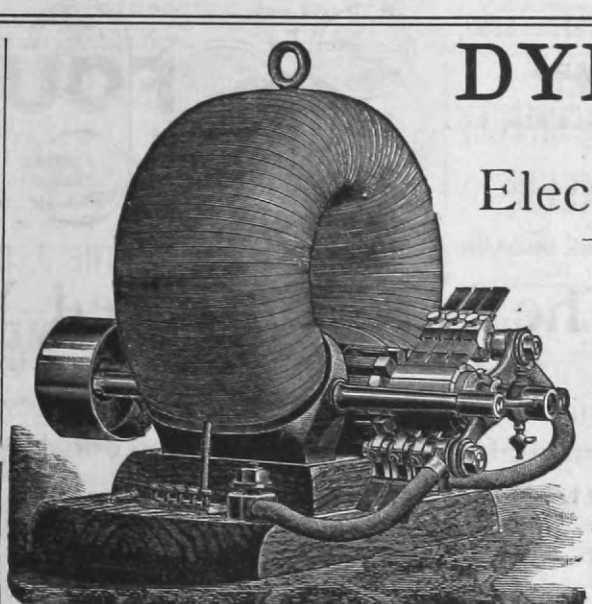


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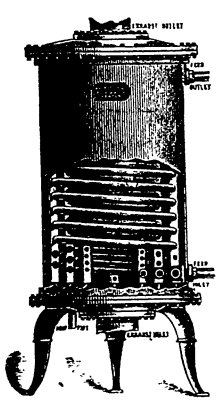


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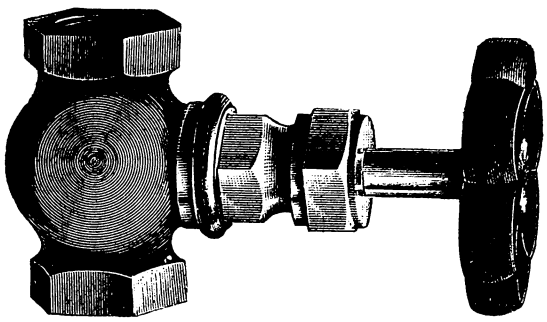
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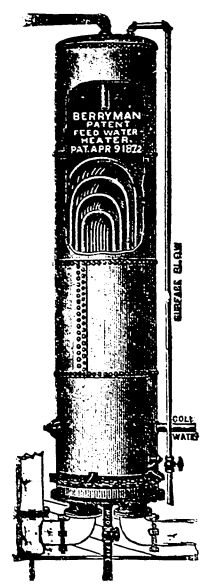
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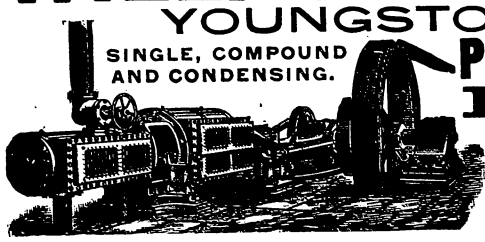
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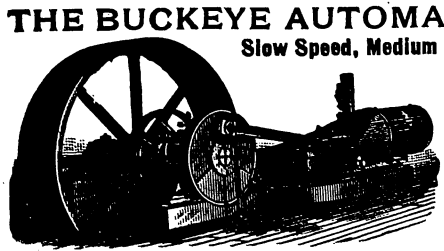
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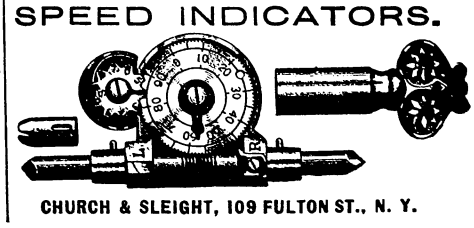
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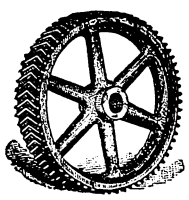
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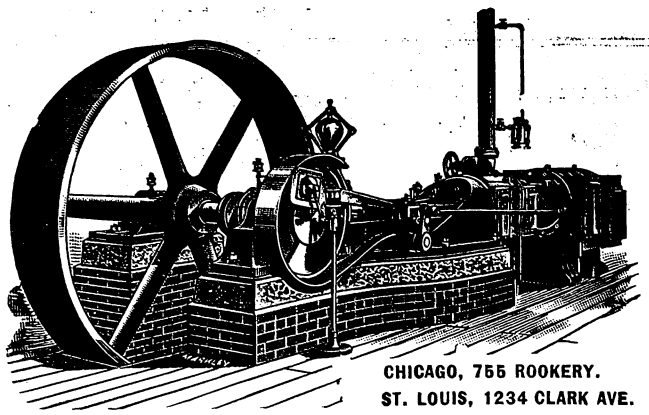
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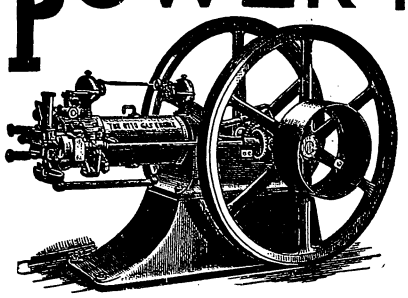
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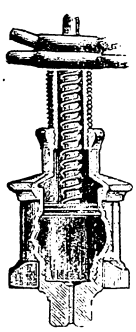
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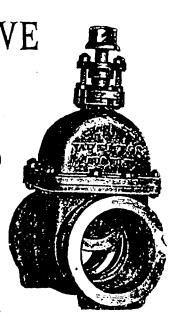
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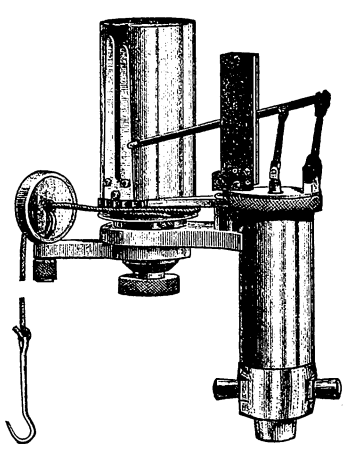
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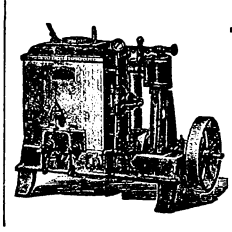
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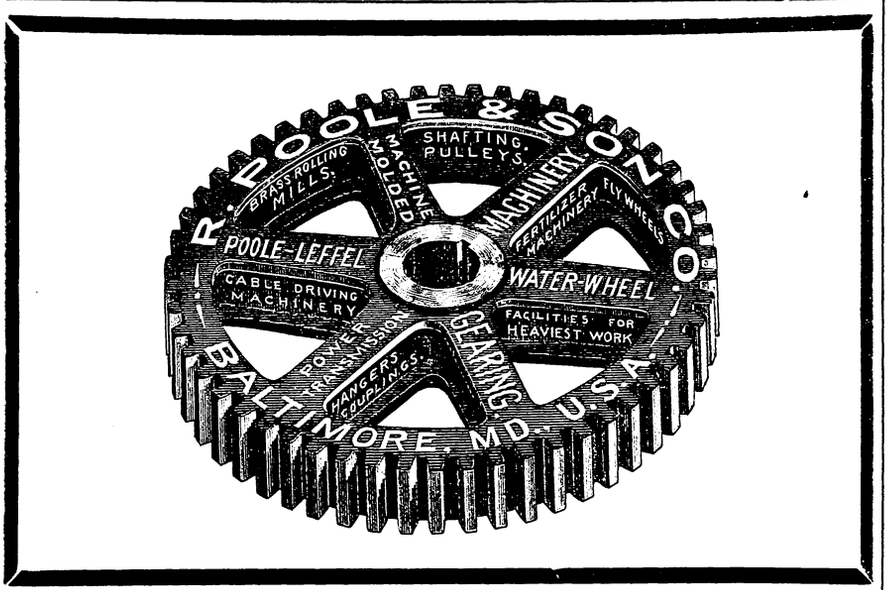
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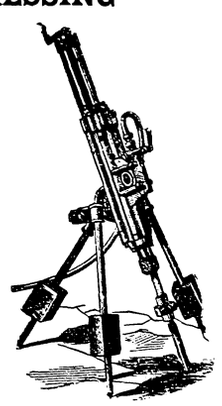
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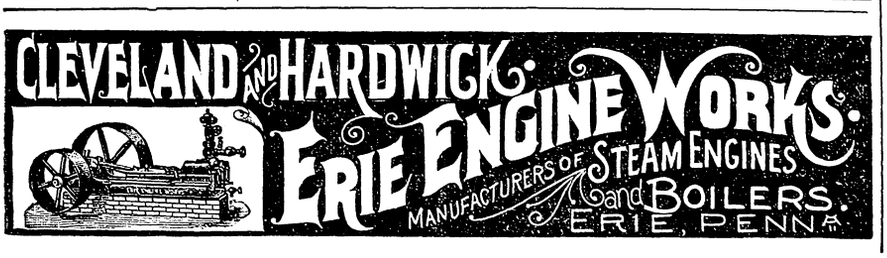
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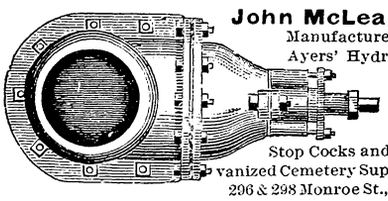
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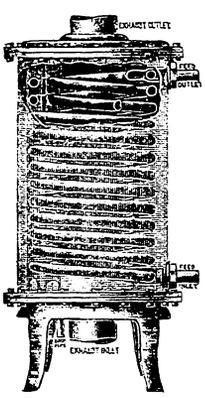
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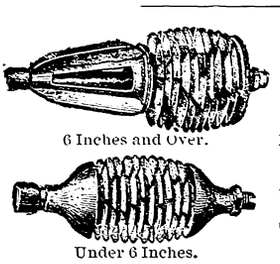
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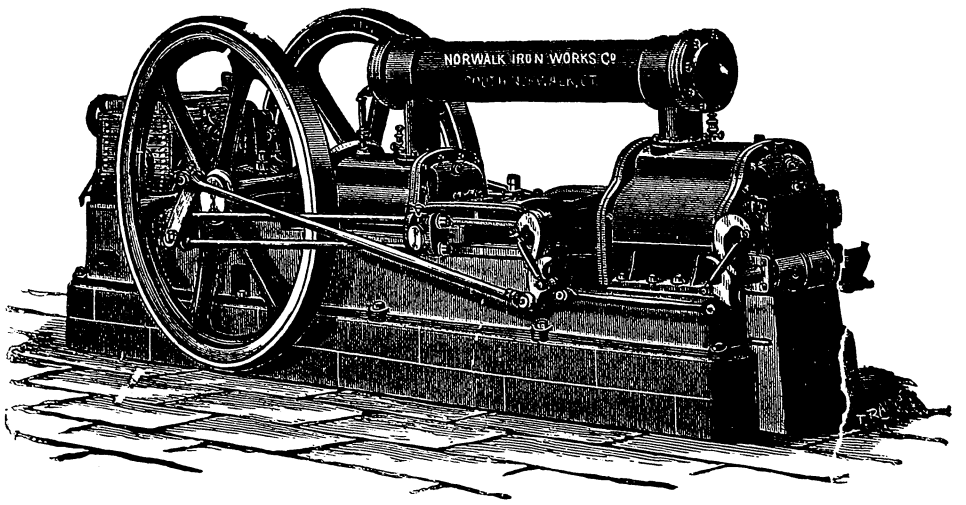
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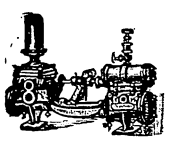
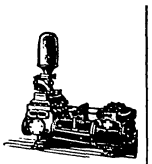
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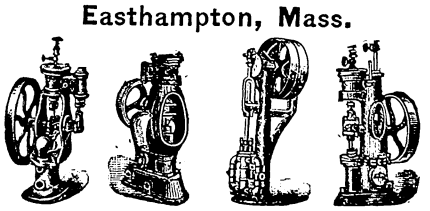
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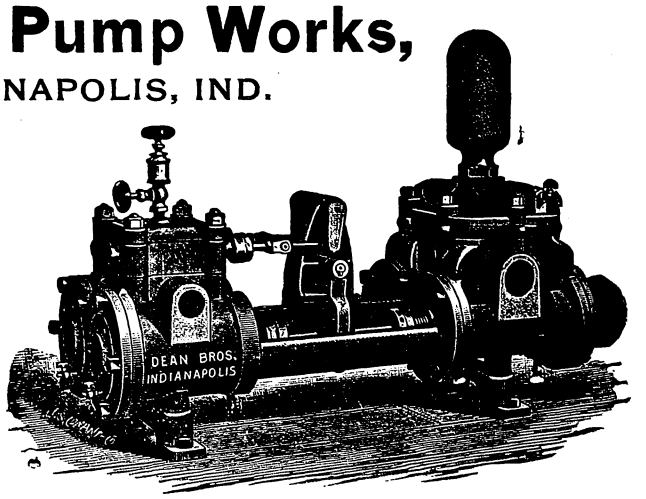
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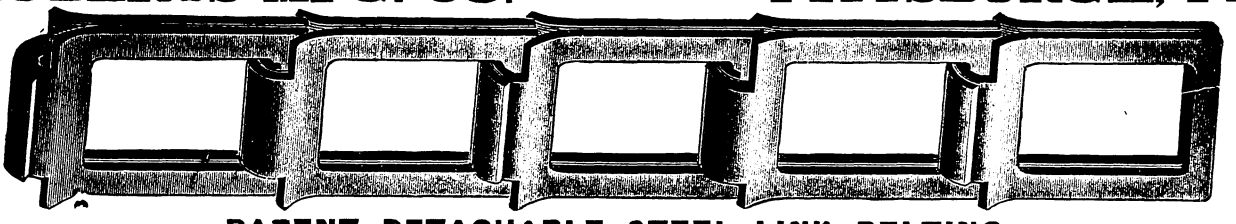
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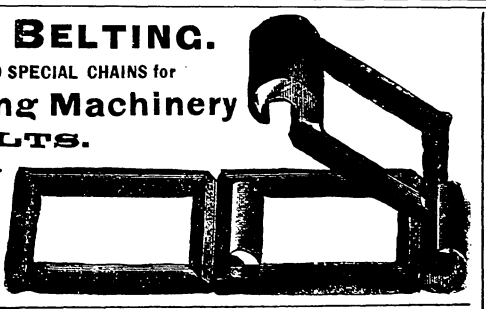
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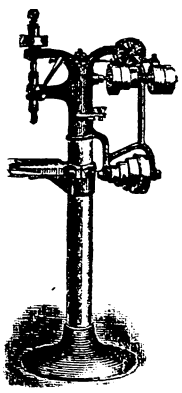
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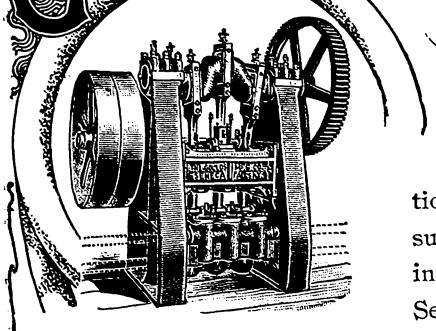
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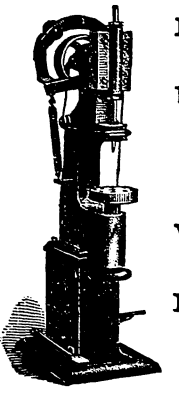
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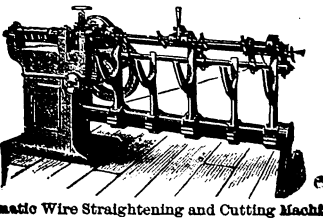
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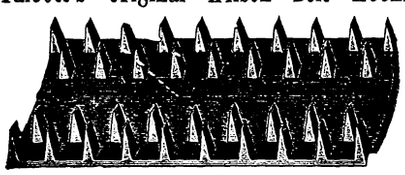
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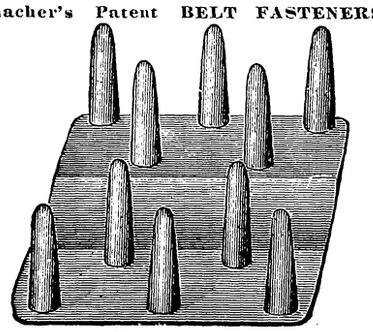
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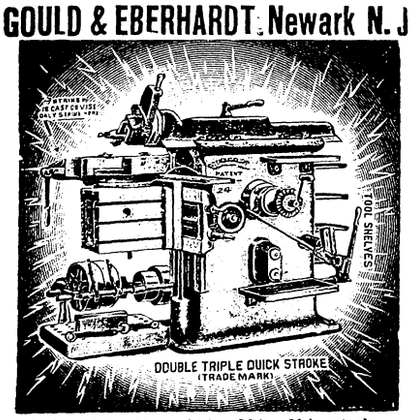
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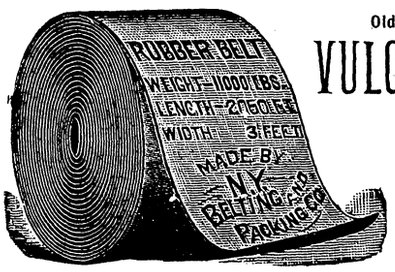
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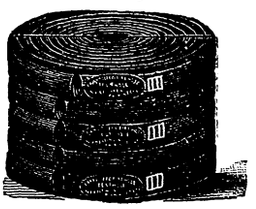
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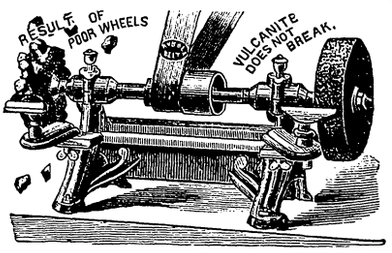


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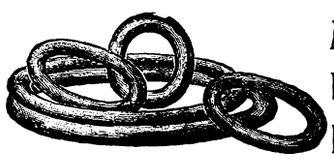
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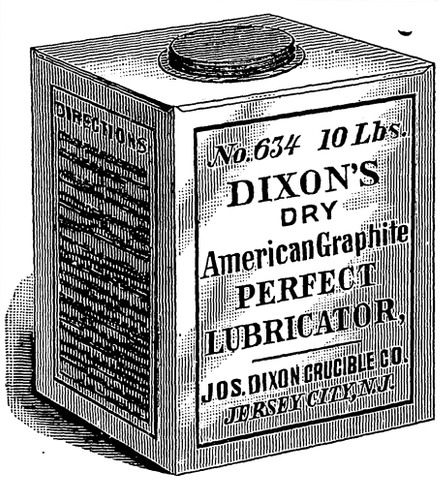
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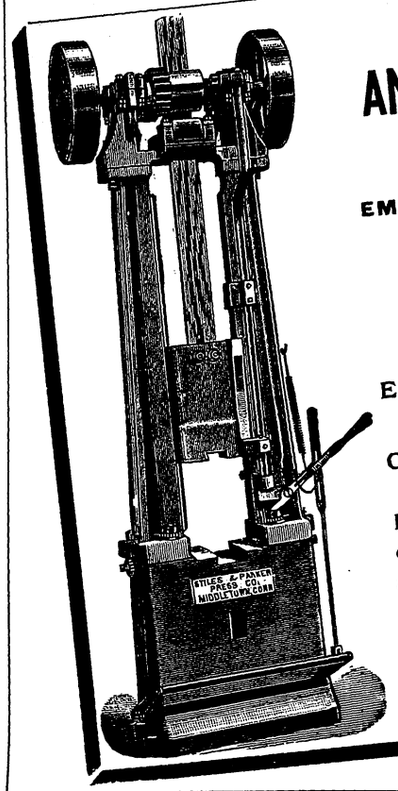
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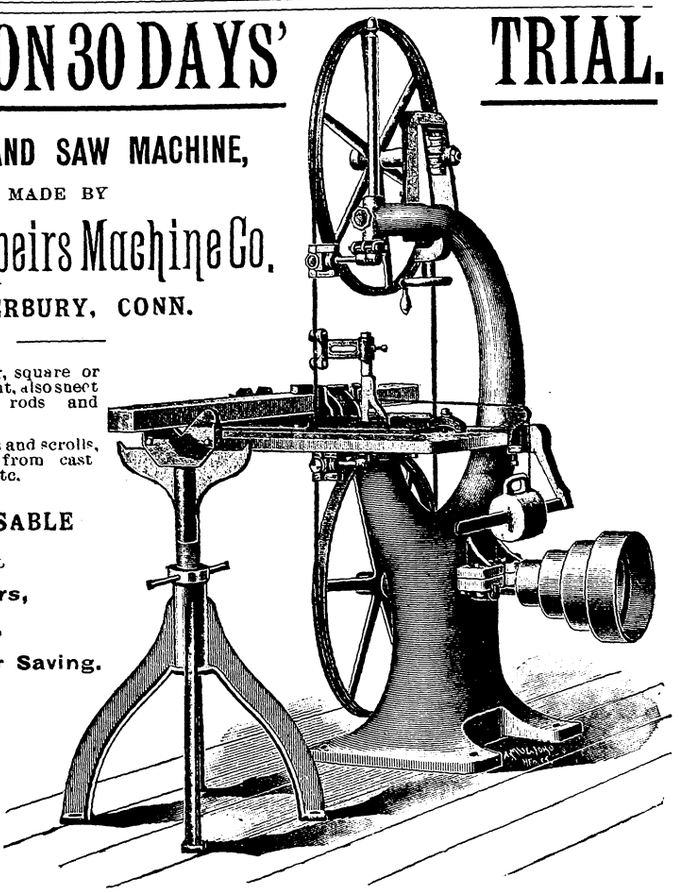
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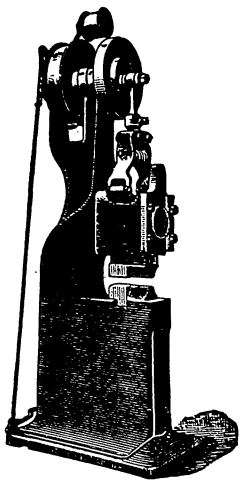
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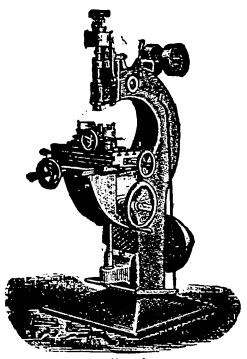
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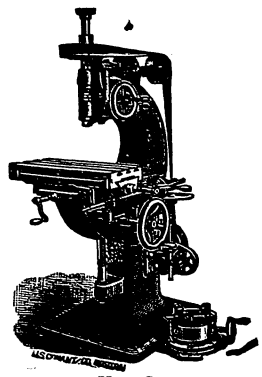
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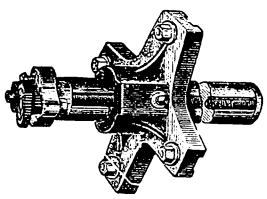
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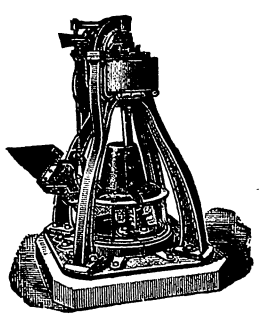
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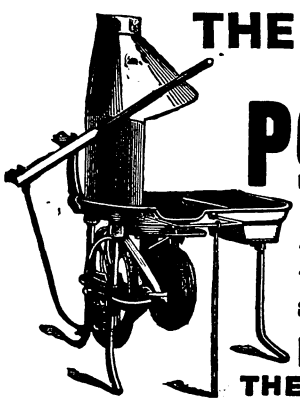


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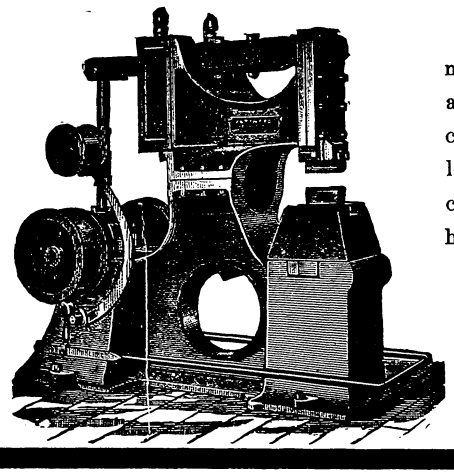
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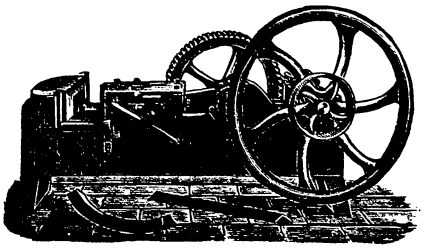


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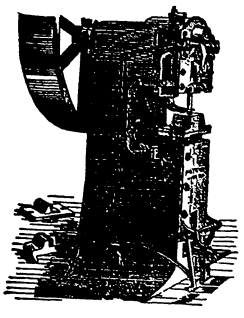
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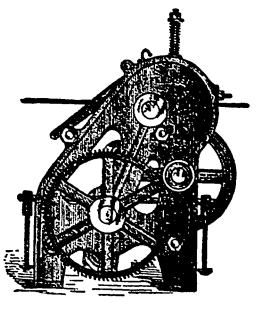


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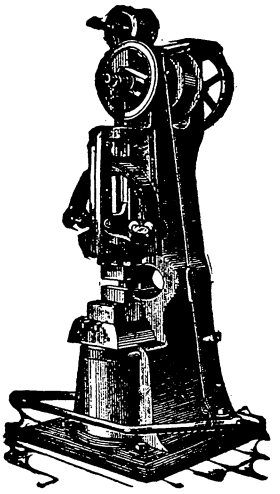
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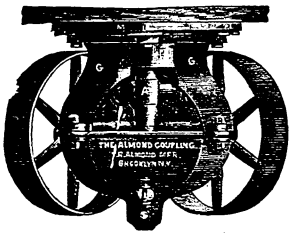


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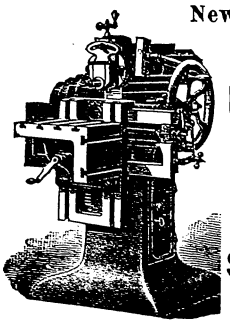




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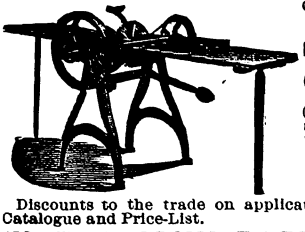
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New Haven, Conn.



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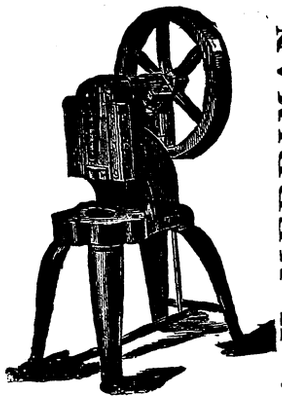
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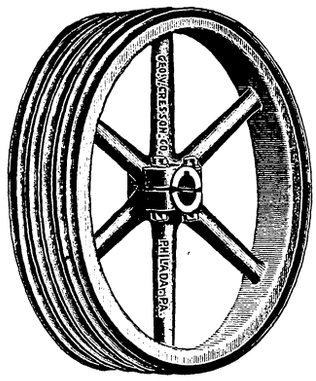
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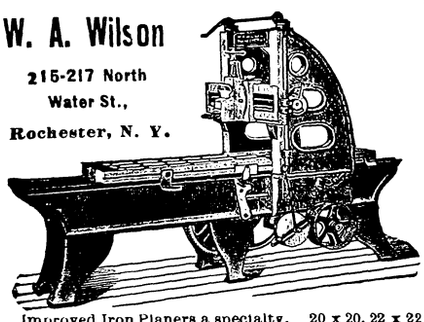


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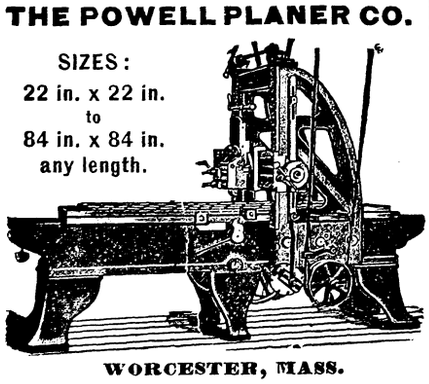
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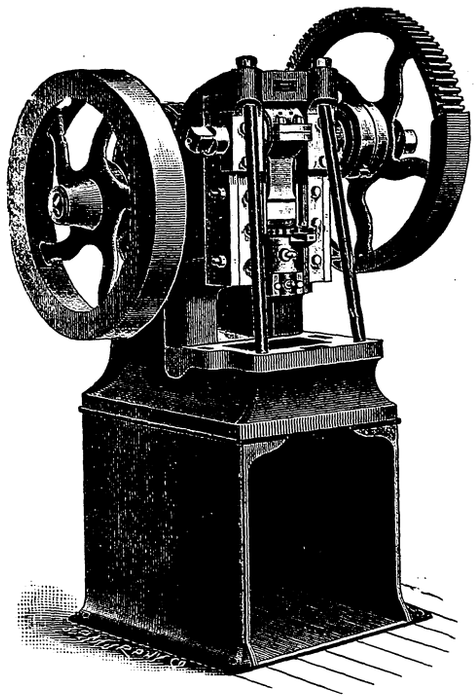
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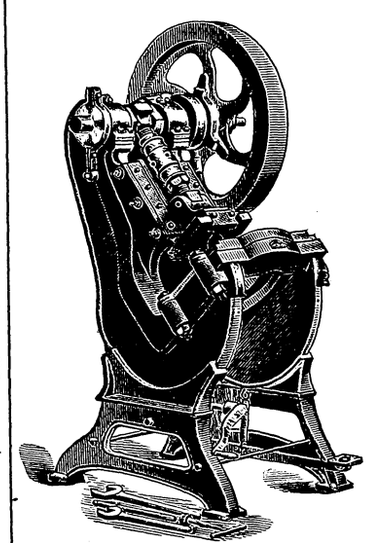
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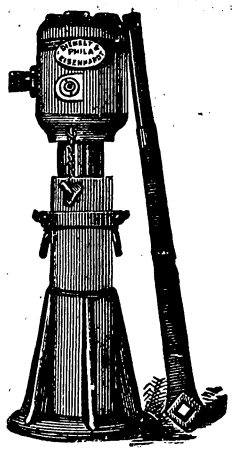
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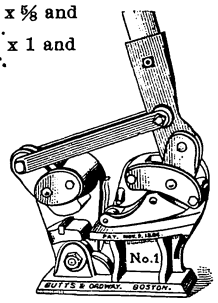
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SURE GRIP.

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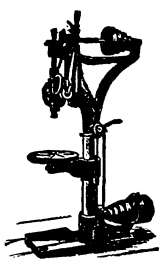
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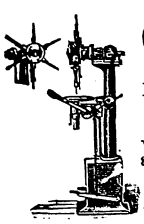


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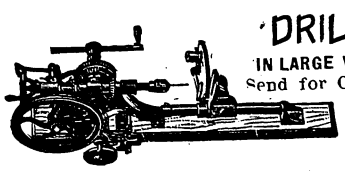


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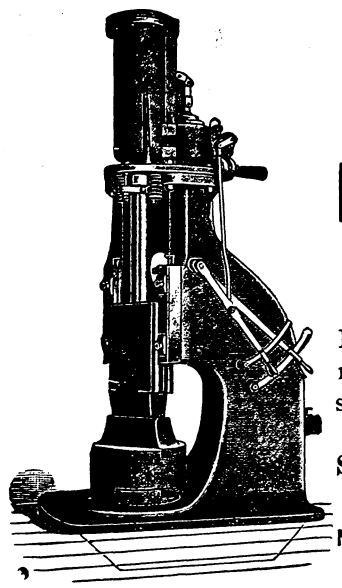
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Metal-Working Machine Tools

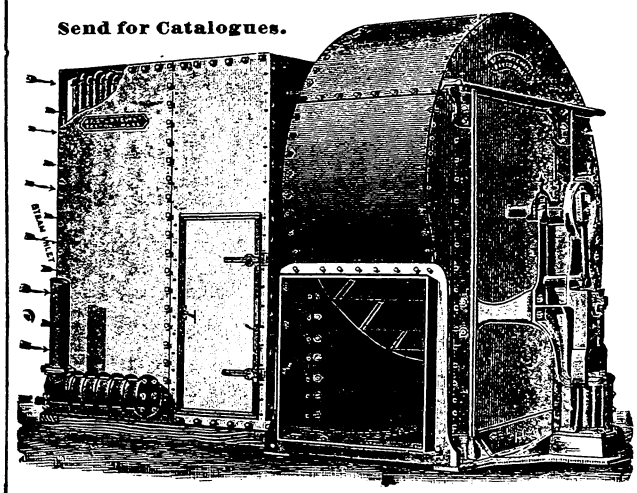
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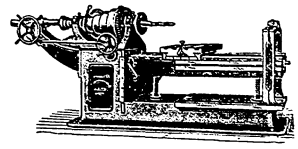
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Horizontal Boring and Drilling Machine.

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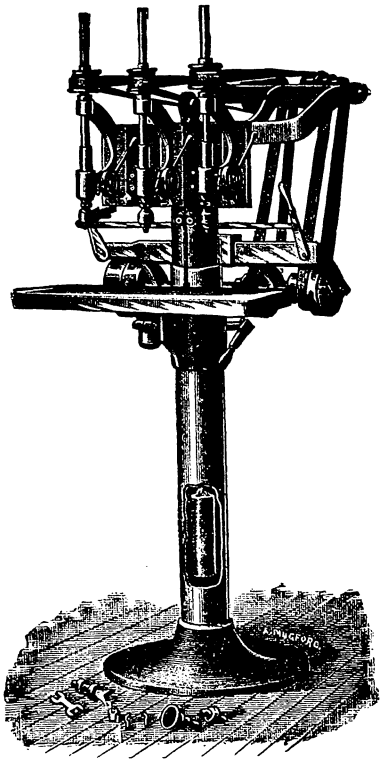
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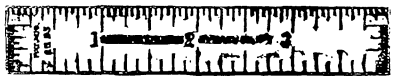
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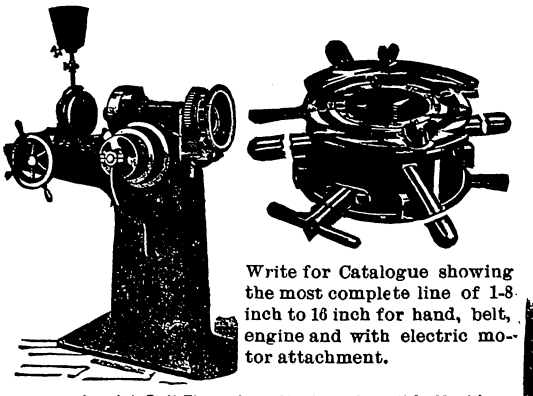


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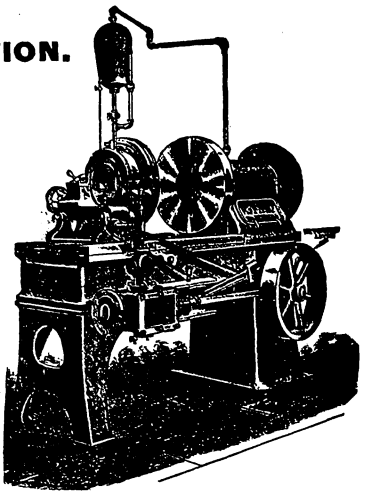
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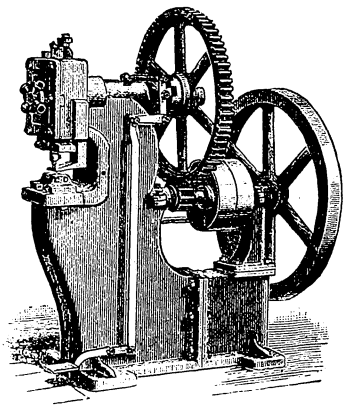
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DROP FORGINGS, BLAST FORGES.
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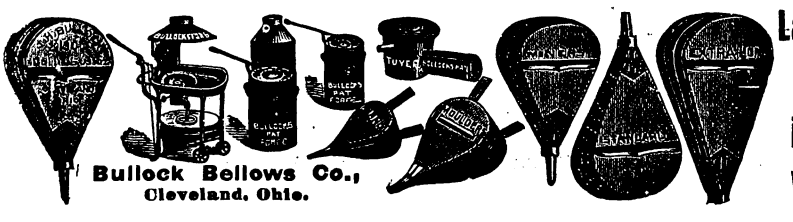
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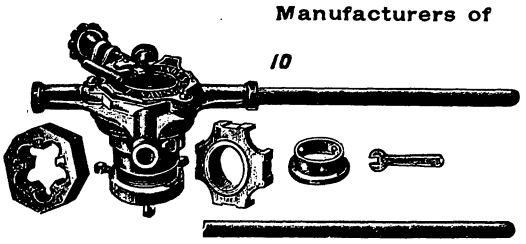
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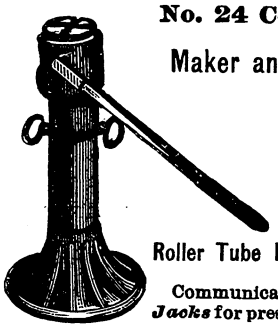
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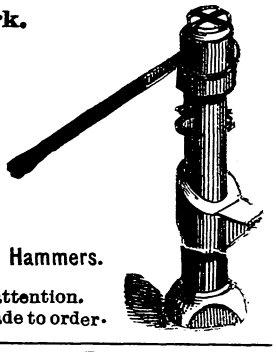
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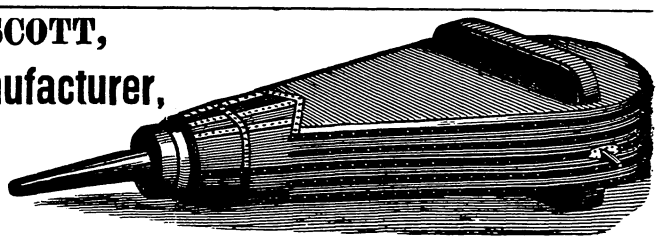
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Jacks for pressing on Car Wheels or Crank Pins made to order.

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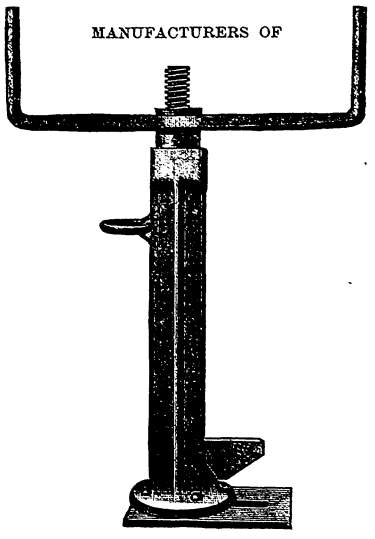
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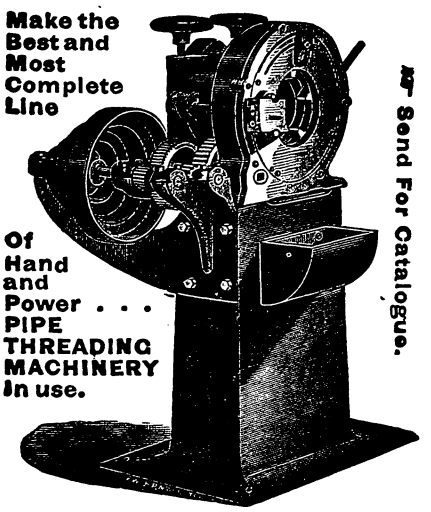
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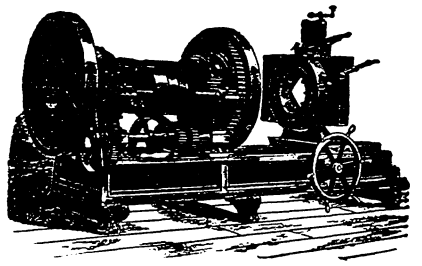
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A Treatise on Brass Founding, Molding, the Metals and their Alloys, etc.

By JAMES LARKIN.

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A New Revised and Greatly Enlarged Edition.

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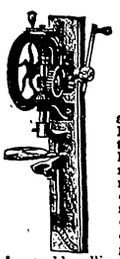


The No. 1 Champion Lever Blacksmith Forge.

Largest Blacksmith Forge in America.

Fan 16 inches in diameter with a five inch outlet, Hearth 32 by 45 inches.

Provided with our Patent Sloped Bottom Coal Box, which holds one-half bushel. This Slope Bottom Coal Box in connection with the enormous size of Fan and Hearth, makes this Forge the greatest tool in America for the Blacksmith for quick and easy work.



The World's Champion $10.00 New Upright Self-Feed 1891 Pattern Post Drill.

Weight, 120 Pounds.

Drills from 0 to 1¼ inch hole and to centre on a 15-inch circle. The Crank has Two True and Honest Speeds that can be shifted from shaft A to shaft B (or balance wheel shaft), precisely like all high-grade and high-priced drills, and not a blindfold imitation of a double speed drill made with a wooden handle riveted on the rim of the fly wheel, at a cost of just 1½ cents, and necessitating the blacksmith to have a helper, or turn the drill with the Left Hand, as one must operating must face the drill to do the work, giving one hand for motion and the other for oiling and handling the work. By referring to illustration it will be seen that the Gears on this Drill are all provided with Two Journal Bearings, one on each side, this being the most important feature to make a drill strong and powerful, and just where all cheap-made Drills are weak, as their main driving gear revolves on a simple stud, cheaply screwed into the weakest part of the backbone, which is not only cheap and flimsy in construction, but not practical, which none know better than the intelligent mechanic. Our Catalogue illustrates Five Heavier Drill equally as cheap as the above.



Champion 1890 Lever Blower.

Guaranteed King of all Blowers.

The 1890 is the only Double Geared Blower made. It will produce one-third more blast with 20 strokes per minute, than any other Lever Blower will produce with 30 strokes per minute, a labor saving of 600 strokes per hour, or 6000 strokes per day of 10 hours steady work. It works easy and noiseless. At a trial test a little girl six years old easily furnished the blast to put a welding heat on a 4-inch iron.

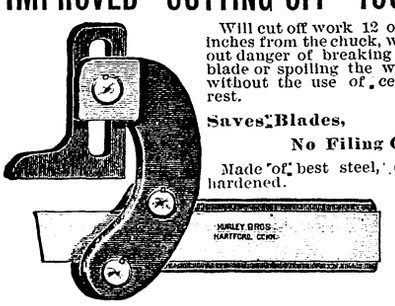
Dimensions of 1890 Blower: Fan, 16 inches; Wheel, 25 inches in diameter.

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Saves Blades,

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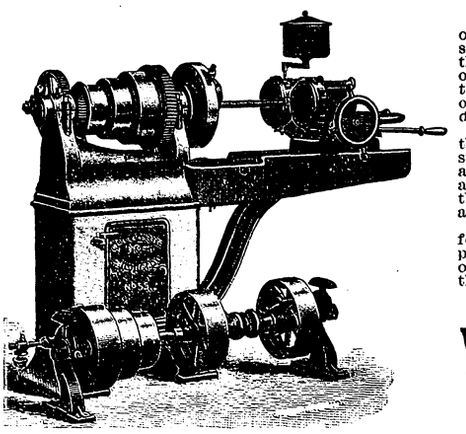
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Pocket Companion. Containing useful information and tables appertaining to the use of wrought iron and steel as manufactured by Carnegie, Phipps & Co., Ltd., Pittsburgh, Pa. For engineers, architects and builders. 1892 edition. Edited by C. L. STROBEL, C.E., assisted by F. H. KINDL, C.E. Leather with flap, 334 pages..... $2.00

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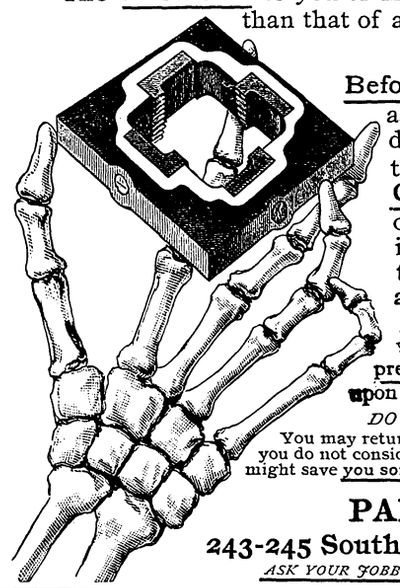
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Two "Points" about it—only 2 (There are plenty more, but we only mention these two here.)

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Before it becomes dull from use it will cut as many perfect threads as the best solid die extant, and when it is dull, you don't throw it away and buy a new one—Oh, no! You simply sharpen the cutters on a common grindstone, and so make it practically as good as it was at first, and this sharpening process may be repeated a number of times.

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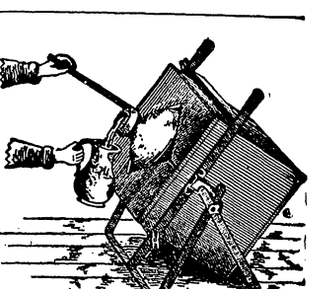
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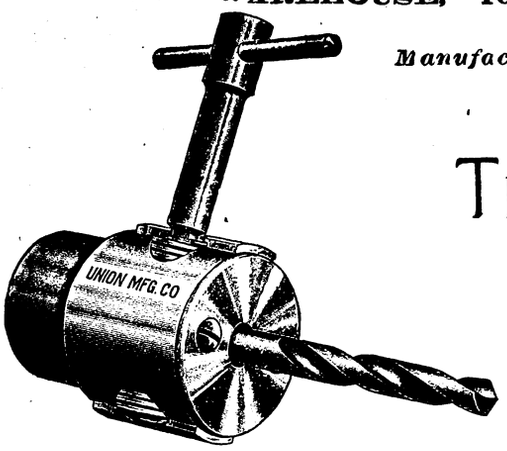


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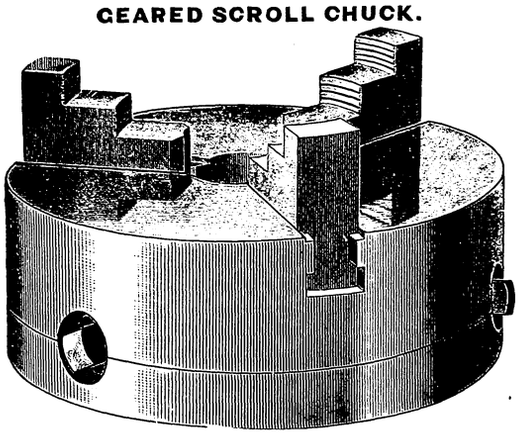
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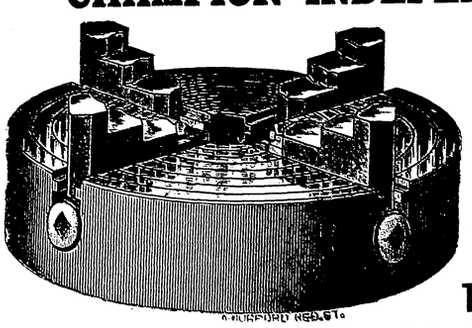
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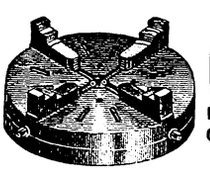
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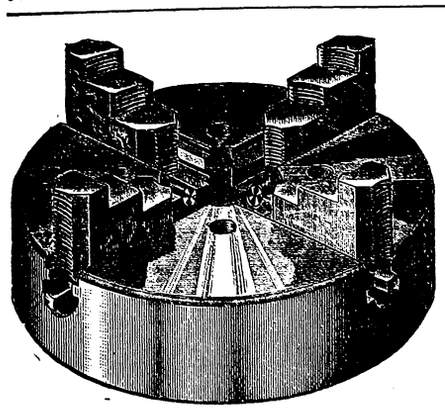
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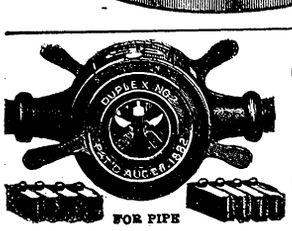
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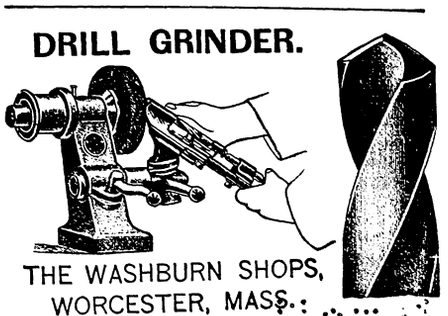
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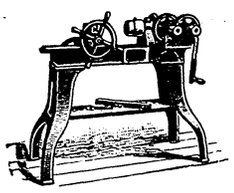
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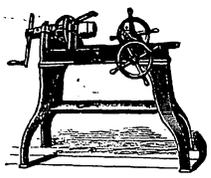


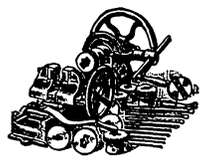
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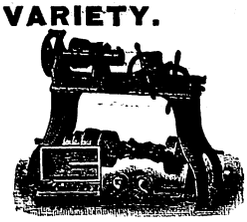
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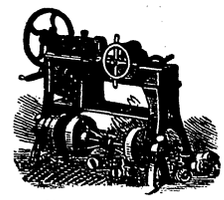
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No. 8.


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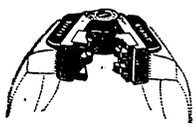

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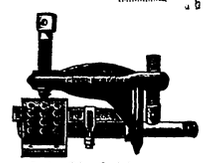

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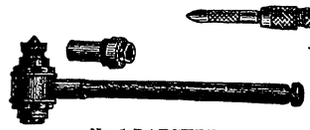
Hartford, Conn., U. S. A.,

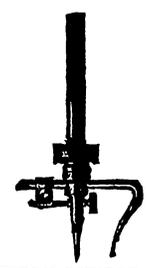


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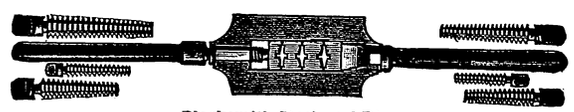
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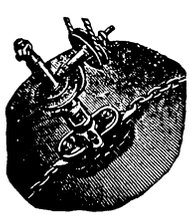
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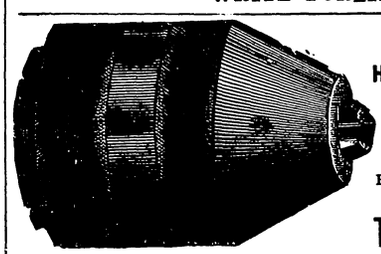



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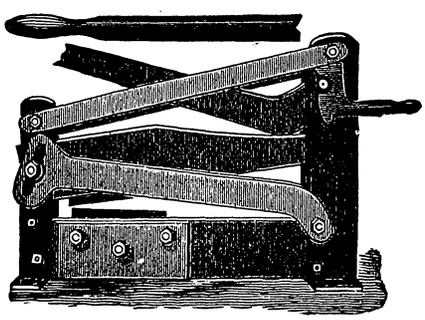
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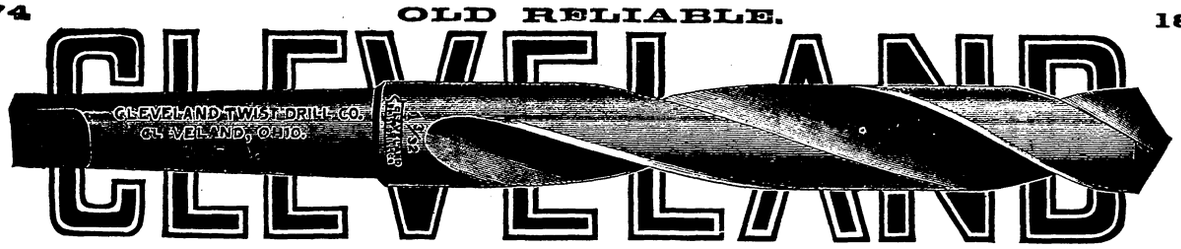
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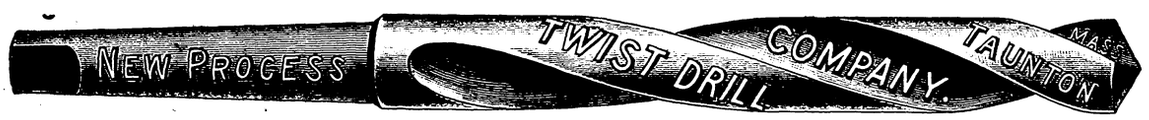
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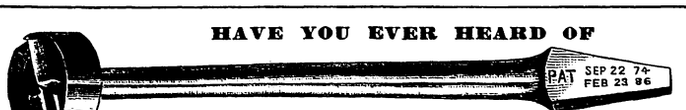
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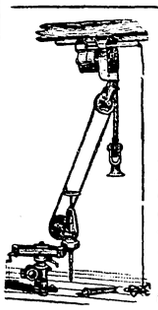
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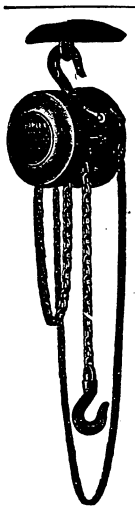
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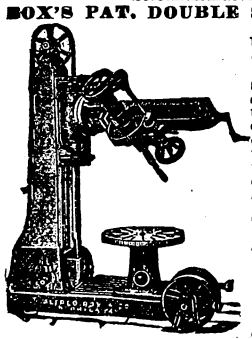
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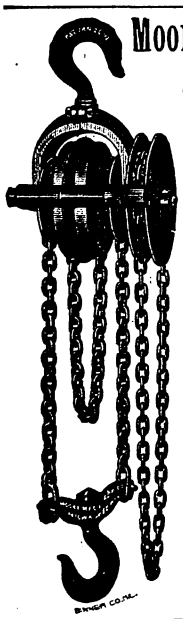
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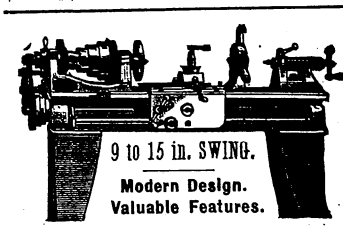
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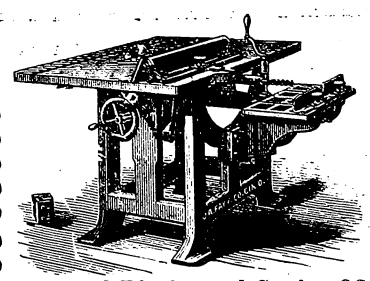
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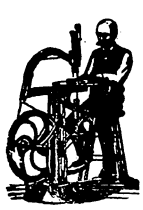
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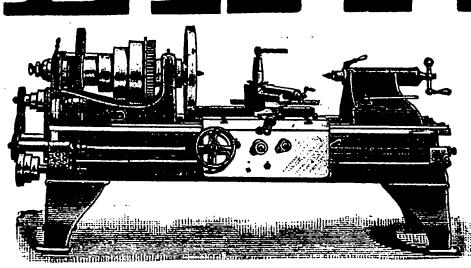
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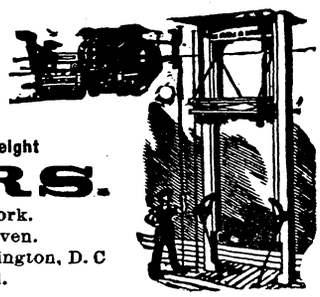
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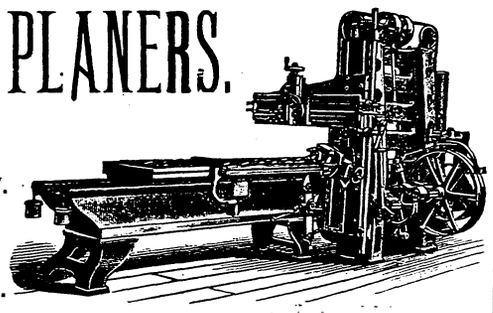


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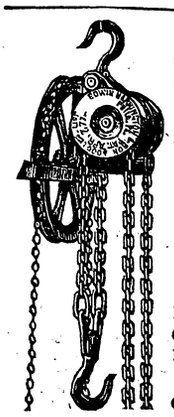
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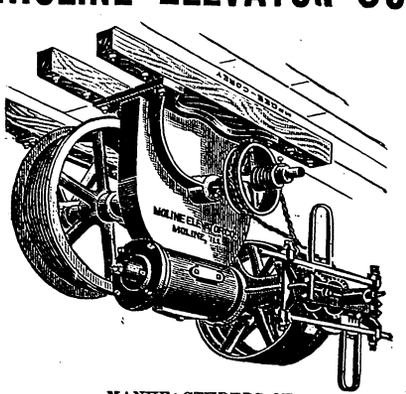
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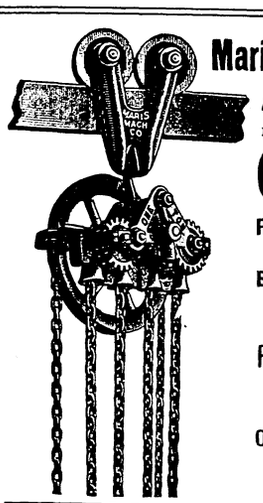


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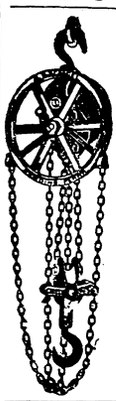
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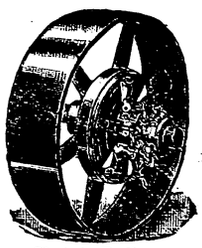
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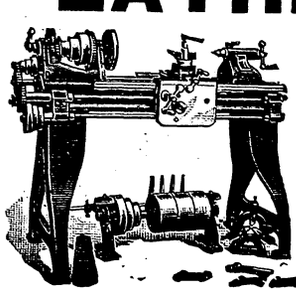
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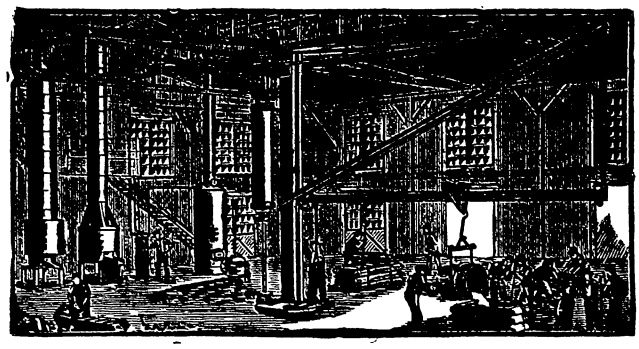
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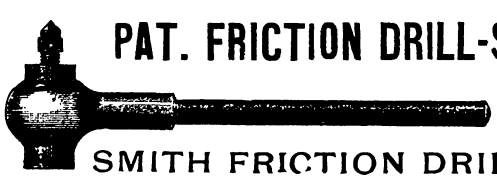
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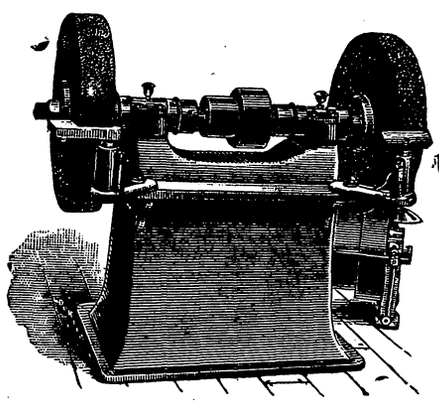
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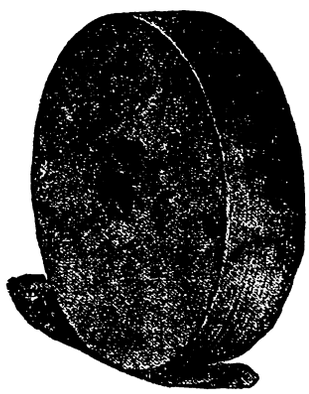
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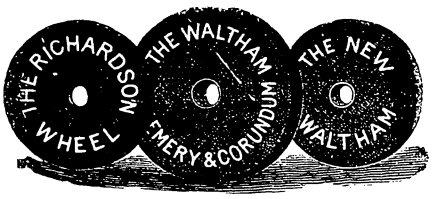
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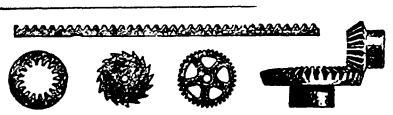
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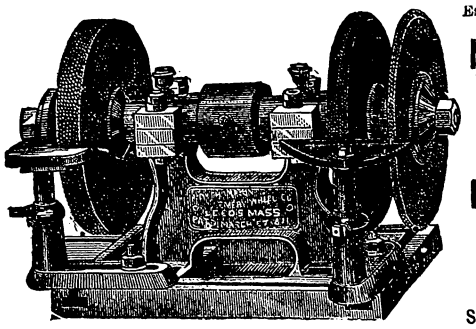
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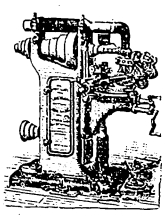
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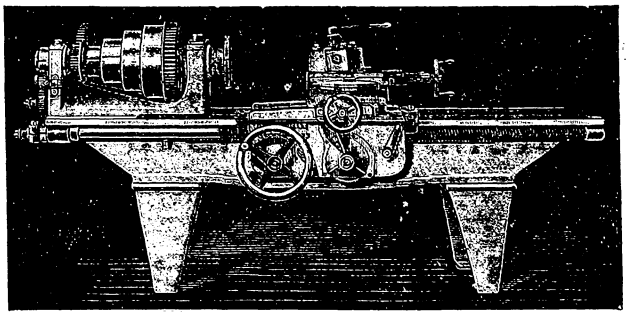


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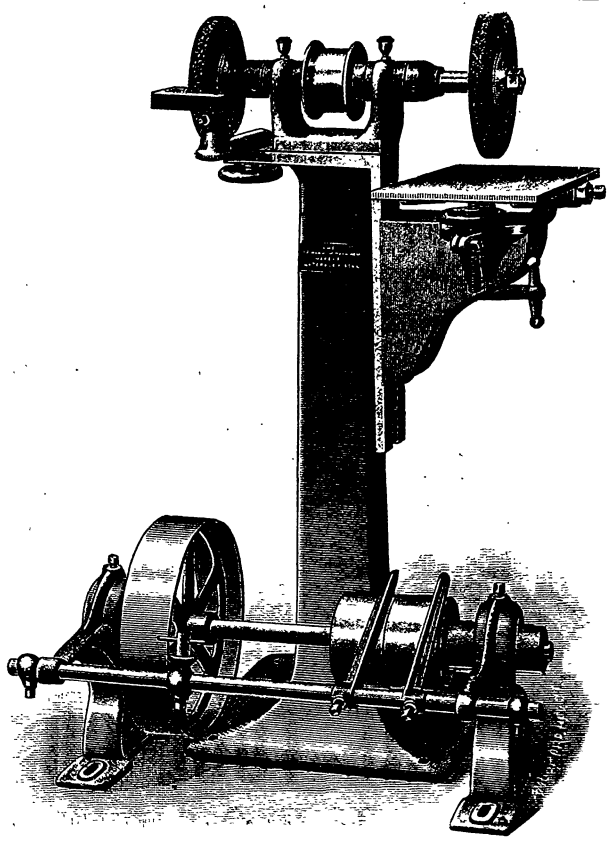
THE ALLENTOWN ROLLING MILLS,
MANUFACTURERS OF
Pig Iron, Merchant Bar Iron, Rolled Shafting, Mine Rails, I-Beams, Tee Bars, Fish Plates, Bolts, Nuts and Spikes.
CRANES.
Transfer and Locomotive Turn Tables, Blast Furnace, Rolling Mill and Mining Machinery, Mining Pumps, Etc. Roll Trains, Shears, Punches, Iron Trucks, Etc. Builders of all classes of Machinery, Makers of Castings of all descriptions for Cable and Electric Railway.
ALLENTOWN, PA.

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THE E. J. MANVILLE MACHINE CO.,

MANUFACTURERS,

WATERBURY, CONN.



UNIQUE DIE GRINDER.

UNIQUE DIE GRINDER.

Is designed for grinding dies, stamping dies, punches, rivet machine tools, or similar appliances coming within its range, requiring a flat surface, or it can be as readily adapted to the same purposes for which the ordinary grinder is used. The spindle is of steel, running in dust-proof bearings, and is made to receive an emery wheel at each end.

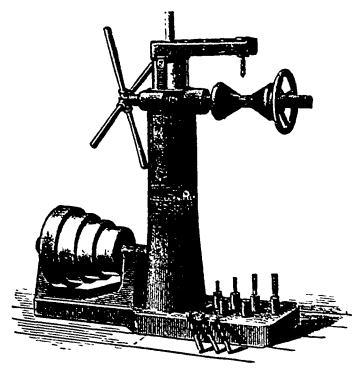
Height from floor to center of Spindle.	45 inches.
Length of Spindle over all.	23 inches.
Distance between Wheels.	17 inches.
Size of Table,	10½ x 18 inches.
Vertical adjustment of Table.	9 inches.
Weight.	300 lbs.

SPECIAL AUTOMATIC MACHINES.

POWER PRESSES.

WIRE-WORKING MACHINES.

Tapping Machines



ENGINE LATHES,
TURRET LATHES,
PULLEY LATHES,
FOX MONITOR LATHES,
CYLINDER BORING MACHINES,
MOTOR GEAR LATHES.

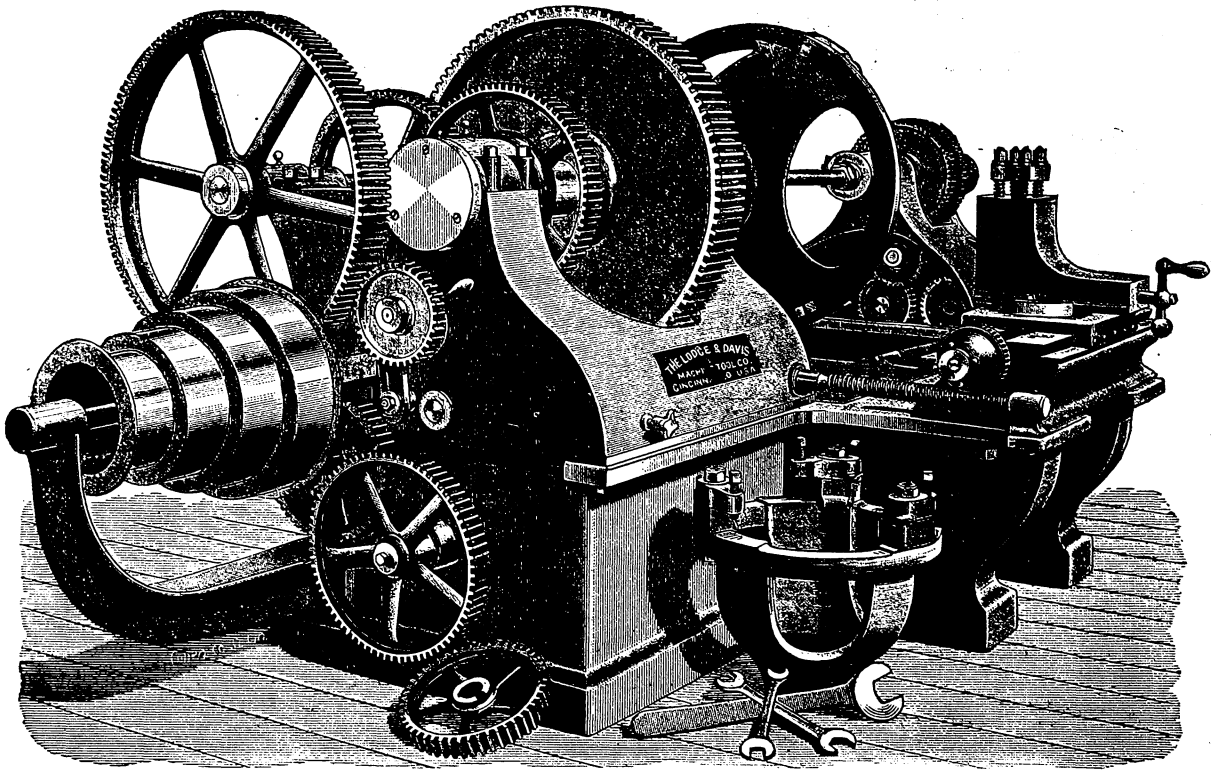
THE

Lodge & Shipley Machine Tool Co.,

107-113 Culvert St., - CINCINNATI, O.

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STANDARD PULLEY LATHES.



30 Inch

42 Inch

60 Inch

THE LODGE & DAVIS MACHINE TOOL CO.,

WORKS, CINCINNATI, O., U. S. A.

NEW YORK, CHICAGO, BOSTON, ST. LOUIS.

BROWN & SHARPE MANUF'G COMPANY,

PROVIDENCE, R. I.

PRICES:

No. 1 UNIVERSAL MILLING MACHINE.

1864, $1,000.00; 1875, $800.00; 1886, $550.00; 1892, $480.00.

No. 2 PLAIN MILLING MACHINE.

1875, $425.00; 1886, $340.00; 1892, $275.00.

No. 4 SCREW MACHINE.

1875, $600.00; 1886, $450.00; 1892, $350.00.

No. 2 UNIVERSAL GRINDING MACHINE.

1886, $800.00; 1890, $650.00; 1892, $495.00.

A still further reduction in the prices of Universal Grinding Machines has this year been made

PARTICULARS GIVEN ON APPLICATION.

Our machines are made with the intention that they shall be the best of their respective classes. Our buildings are modern and our tools and appliances the best attainable; our labor and methods are constantly becoming more efficient. As the cost of the work is diminished, the prices of the machines are reduced.

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BARGAINS
In Second-hand
TOOLS.

14 x 6 Kirkwood Lathe.
15 x 8 Perkins "
17 x 8 Muller Lathe, with Taper.
18 x 8 Lodge & Barker Lathe.
20 x 8 Steptoe Lathe.
20 x 10 Porter " Good as new.
24 x 16 New Haven Lathe.
25 x 20 Wood & Light Lathe.
26 x 12 Lowell Lathe.
36 x 20 Perkins "
96-in. Triple Geared Lathe.
16 x 5 Reinshagen Turret Lathe.
25-in. Pratt & Whitney Lathe.
18 x 18 x 2 Williams Planer.
24 x 24 x 5 Lathe & Morse Planer.
30 x 30 x 5 Cove Planer.
30 x 30 x 7 Wright "
30 x 30 x 7 New Haven Planer.
32 x 32 x 8 " " "
24-in. Lodge & Davis Geared Shaper.
24-in. Hendey Friction Shaper.
26-in. Lodge & Davis Geared Shaper.
No. 3 Brainard Milling Machine.
Heavy Slab Miller.
5-ft. Plain Radial Drill.
Upright Drills, all sizes.
4½-in. stroke Newton Slotter.
30 and 40 lb. Helve Hammers.
Double Head National Bolt Cutter.
Diamond Water Grinders.

The Lodge & Davis Machine Tool Co.,
WORKS, Cincinnati, Ohio.
NEW YORK, 64 Cortlandt Street.
CHICAGO, 68 & 70 So. Canal Street.
ST. LOUIS, 823 No. Second Street.

REMOVAL,
MAY 1ST, TO
14 DEY ST.

SPECIAL SALE previous to our Removal of the following MACHINE TOOLS, Second-hand and New:

Engine Lathe, 32 in. x 16 ft., new Heavy Pattern.
" " 24 in. x 12 ft., "Fitchburg," complete, with Compound Rest and Cross Feed. A1 order.
" " 21 in. x 10 ft., Cpd. Rest and Cross Feed
" " 22 in. x 10, 12 and 14 ft., "Improved heavy pattern." "New features."
" " 20 in. x 8-10 ft., "Improved style."
" " 18 in. x 5 ft., Jones & Lamson, complete, with Rod and Screw, Hollow Spindle 1¾ and Chuck. Good order.
" " 17 in. x 9 ft., Lathe & Morse, Back Geared and Screw Feed. Fair. Price $100.
" " 16 in. x 8 ft., Modern Style, complete, with Hollow Spindle and Chuck.
" " 16 in. x 8 ft., Old Style, Back Geared, Screw Cutting, and with Gears and Chuck. Fair order. Price $75.
" " 14 in. x 6 ft., Fitchburg, complete. A1.
" " 13 in. x 6 ft. Cpd. Rest, Cross Feed, "New Pattern."
Planer, 21 in. x 5 ft., Hewes & Phillips. Fair. Price $125
" 22 in. x 5 ft., Latest pattern. A1 order.
" 24 in. x 5 ft., complete. Good order.
" 24 in. x 6 ft. Lathe & Morse. Good order.
" 24 in. x 6 ft., Latest Pattern.
" 28 in. x 6 ft., complete. Good order.
" 30 in. x 8 ft., Latest Pattern. Good as new.
Shaper, 6 in. stroke, 22 in. feed, Crank Motion, with Vise complete. Good order. Price $80.
" 9 in. stroke, Gould, Crank. Good order.
" 9 in. " Hewes & Phil., ex. heavy. Good.
" 13 in. " Crank, extra heavy. Good order.
" 13 in. stroke, 60 in. feed, extra heavy and powerful, with 2 Tables. Good order.
" 15 in. " Crank, with Chuck and Centers.
" 20 in. stroke, Crank, very heavy. Good order.
Slotting Machine, 8 in. stroke, Modern, complete. Good.
Upright Drill, 20 in., Wheel Feed. A1 order.
" " 25 and 32 in. Bk. Gd. and Auto. Feed.
Radial Drills, 3, 5, and 6 ft. Arms, "Ex. heavy pattern"
Gang Drill, 3 Spindle, Garvin's. Good order.
Upright Boring and Turning Mill, 38 in. A1 order.
Vertical Turret Chucking Machine, "Brown & Sharpe."
Bolt Cutter, 1¼ in., Revo. Die Head. Price $50.
Lincoln Pattern Milling Machine. Low price.
Screw Machine, Brown & Sharpe, No. 5, complete. Good.
Bliss No. 20 style Press. New.
Long & Allstatter style Punch. Complete.
Boiler Bending Rolls, 8 ft. 2 in., Latest Pattern.

J. J. McCabe,
68 Cortlandt St., New York.
Successor to E. P. Bullard's New York Machinery Warerooms.

FOR SALE.
Choice Bargains in Horizontal R. T. Boilers.

3 100 H.-P. Hor. Boilers, 66 in. x 16 ft. Built by I. P. Morris Co.
2 100 H.-P. Hor. Boilers, 66 in. x 16 ft. Built by Warden Mfg. Co
1 100 H.-P. Hor. Boiler, 66 in x 16 ft. Built by Hoff & Fontaine.
1 85 H.-P. Hor. Boiler, 60 in. x 16 ft. Built by Jacob Naylor.
2 75 H.-P. Hor. Boilers, 54 in. x 16 ft. Built by Jacob Naylor.

These Boilers are insured in the "Hartford" Co. for 100 lbs. pressure and are complete with all fixtures. They must be removed at once and will be sold cheaply.

L. F. SEYFERT'S SONS,
437-441 N. 3d St., Philadelphia, Pa.

METAL WORKING MACHINERY.
All kinds.
NEW AND SECOND HAND.

600 Machine Tools in Stock.

Send for lists of Second-hand Machinery and Secure Bargains.

PRENTISS TOOL & SUPPLY CO.,
115 Liberty Street, NEW YORK.
59 South Canal Street, CHICAGO, ILL.

PLANER, 28 in. x 26 in. x 8 ft., table. Good order $350.00
" 30 in. x 30 in. x 6 ft., with chuck. Rebuilt 275.00
LATHE, 18 in. x 10 ft., with chuck. Good order. 160.00
DRILL PRESS, 28 in., Barnes. Used 6 months.. 200.00
" " 28 in., Cin. Used 1 month 185.00
" " 26 in., Plain, heavy..... 85.00
" " 26 in., Plain. Good order 85.00
FORG'G DROP, 100-lb. Hammer. New Design. 160.00
WIRE STRAIGHTENER and Cutter, Semi-Aut. 60.00
BOLT CUTTER, New Head and Dies ⅜ to 1½-in. 175.00
7 x 9 ENGINE. Splendid order..... 85.00
POWER PUNCH PRESSES.....$75.00 and upward.

AMER. TOOL WKS., Cleveland, O.

SECOND-HAND
MACHINISTS' TOOLS.

1 Planer, planes 15 ft. 42 in. x 42 in,
1 Planer, planes 6 ft. 32 in. x 25 in.
1 Planer, planes 6 ft. 30 in. x 30 in., Whitcomb.
1 Planer, planes 5 ft. 24 in. x 24 in.
1 Planer, planes 5 ft. 22 in. x 22 in., Hendey.
1 Planer, planes 4 ft. 24 in. x 24 in.
1 Crank Planer, 2 ft. 18 in. x 12 in. A1.
1 Engine Lathe, 18 ft. bed, 82 in. swing, for Boring and Turning.
1 18 ft. 24 in. Lathe.
1 12 ft. 24 in. Engine Lathe. Fair order.
1 12 ft. 22 in. New Haven Lathe. Good.
2 6 ft. 15 in. Wood & Light Lathes.
1 6 ft. 18 in. Lathe.
6 6 ft. x 16 in. Blaisdell Engine Lathes.
1 Pratt & Whitney Cushioned Hammer.
1 36-in. Back Geared New Haven Drill.
1 Brown & Sharpe Universal Grinding Machine. A1.
2 20-in. Wheel and Lever Feed Drills.
1 Small "Eureka" Steam Hammer.
And various other tools.

NEW YORK MACHINERY DEPOT,
Bridge Store No. 16, on Frankfort St., New York.

NEW AND SECOND-HAND TOOLS.

2 22 x 8 Engine Lathes, new.
3 22 x 10 " " "
1 22 x 12 " " "
1 16 x 6 " " "
1 28 x 8 " " second hand.
1 52-in Radial Drill, new. 1 24 x 8 Planer, new.
1 Improved Key Seater, new.
1 Universal Saw Bench, new.
1 Pratt & Whitney No. 3 Lincoln Miller, second-hand.
For special prices address
Lodge & Shipley Machine Tool Co.,
107-113 Culvert St., Cincinnati, Ohio

FOR SALE.
Fitchburg Machine Co. Vertical Automatic Engine, cylinder 14 in. x 14 in. A large variety of second-hand Steam Boiler Feed and Tank Pumps. F. McSWEGAN & SONS,
Dover St. and Franklin Square, N. Y.

RARE CHANCE.
A MACHINE SHOP
OF
Second-Hand Tools
For Sale SINGLY.
MOSTLY FITCHBURG TOOLS.
ADDRESS
Pennsylvania Machine Co., Ltd.,
31 North Seventh Street,
PHILADELPHIA, PA.

14 in. x 6 ft. Engine Lathe, double T rest carriage.
15 in. x 6 ft. " " elevating tool block carriage.
16 in. x 6 ft. " " double T rest carriage.
16 in. x 6 ft. " " taper attachment for carriage.
16 in. x 8 ft. " " compound rest carriage.
16 in. x 8 ft. " " double T rest carriage.
16 in. x 8 ft. " " plain block "
17 in. x 8 ft. " " double T rest
17 in. x 8 ft. " " " " " milling attachment.
17 in. x 8 ft. " " elevating tool post carriage.
18 in. x 8 ft. " " compound rest carriage.
19 in. x 8 ft. " " " " "
20 in. x 10 ft. " " " " "
20 in. x 7 ft. " " plain block carriage, no screw.
21 in. x 10 ft. " " double T rest "
24 in. x 8 ft. " " double T rest " with upsets to make it swing 28 in.
27 in. x 12 ft. " " compound rest carriage.
35 in. x 14 ft. " " " " "
19½-in. Swing Drill, adjustable head.
32-in. " " " " back gear, self-feed.
6 ft. Radial Drill, with plain top table.
10 in. x 5 ft. Speed Lathe.
13 in. x 6 ft. " "
17 in. x 8 ft. " "
18 in. x 6 ft. " "
20 in. x 16 ft. " "
36 in. x 6 ft. Polishing Lathe.
24 in. x 8 ft. Chucking Lathe, plain head, power feed for tail stock spindle.
36-in. Gear Cutter.
Horizontal Boring and Drilling Machines.
24 in. x 24 in. x 7 ft. Planer.
25 in. x 25 in. x 8 ft. "
28 in. x 26 in. x 10 ft. "
42 in. x 42 in. x 20 ft. " two heads on the cross rail.
60 in. x 50 in. x 24 ft. Planer, two heads on the cross rail.

Also the following New Tools for sale at a Bargain.

12 x 5 Engine Lathe, double T rest, "Blaisdell" make.
12 x 6 Engine Lathe, double T rest, "Blaisdell" make.
14 x 5 Engine Lathe, double T rest, "Blaisdell" make.
14 x 6 Engine Lathe, double T rest, "Blaisdell" make.
15 x 6 Engine Lathe, compound rest, "Blaisdell" make.
15 x 6 Engine Lathe, plain rest, "Blaisdell" make.
16 x 6 Engine Lathe, plain rest, "Blaisdell" make.
16 x 8 Engine Lathe, compound rest, "Blaisdell" make.
17 x 6 Engine Lathe, compound rest, "Muller" make.
18 x 6 Engine Lathe, plain rest, "Blaisdell" make.
18 x 6 Engine Lathe, compound rest, "Blaisdell" make.
22 x 10 Engine Lathe, plain rest, "Blaisdell" make.
24 in. x 24 in. x 6 ft. Pond Planer.

PENNSYLVANIA MACHINE CO., Ltd.,
31 N. Seventh St., Philadelphia, Pa.
Successors to H. B. Smith Machine Co., Phila.

FOR SALE—SECOND-HAND.
3 Upright Corliss Boilers, 150 H.-P. each.
1 Locomotive Fire Box Boiler, 50 H.-P.
1 16 x 36 in. Slide Valve Engine.
1 14 x 42 Greene Engine.
1 16 x 42 Babcox & Wilcox.

Large assortment of Knowles, Blake and Worthington Steam Pumps. Write for prices and full description to
D. B. CRUICKSHANK,
Providence, R. I.

I offer 3 20 in. x 24 in. Improved Straight-line
Ingersoll-Sergeant Air Compressors,
built in 1890, and used only seven months at St. Clair Tunnel. Ready for delivery and in first-class condition.

1 24 in. x 60 in. Left-hand **Harris-Corliss Engine.** May be seen running

F. W. IREDELL,
10 Park Place, New York.

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FOR SALE CHEAP.

1 25 H.-P. Straight Line Engine. Good order.
1 2 H.-P. Engine and Boiler, C. P. Willard.
1 7 H.-P. Engine and Boiler, Fitchburg.
1 3 H.-P. Engine and Boiler, Baxter.
1 50 H.-P. Engine, Woodbury. First-class.
1 each 4½, 5 and 8 H.-P. Engine and Boiler.
2 10 H.-P. Engines, Woodbury & Booth.
1 5 H.-P. Engine. Cheap.
1 15 H.-P. Engine. Good and Cheap.
3 7 H.-P. Boilers, Vertical. Cheap.
1 5 H.-P. Engine and Locomotive Boiler. Cheap.
1 10 H.-P. Engine and Locomotive Boiler. Cheap.
1 15 H.-P. Engine, Woodbury & Booth.
1 26 in. x 13 ft. Lowell Lathe. Heavy. Fair order.
1 20 in. x 8 ft. Gleason Lathe. Good order.
1 18 in. x 6 ft. Pond Lathe Fair order.
1 17 in. x 6 ft. Putnam Lathe. Fair order.
1 6½ in. x 16 ft. Lathe. Cheap.
1 13 in. x 5 ft. N. Y. S. E. Co. Lathe. Good order.
1 20 in. x 20 in x 6 ft. Putnam Planer Good order.
1 22 in. x 22 in. x 5 ft. Putnam Planer. Good order.
1 Sensitive Drill, Slate.
1 Strong Lever Drill. Good order.
1 Large Upright Drill. Old style. Cheap.
1 B. & S. Screw Machine, 8 in. swing. Good order.
1 B. & S. Head Finisher. Good as new.
1 B. & S. Head Slotter. Good as new.
3 16 in. Wood Lathes, complete with countershaft.
1 Chair Round Machine with countershaft.
1 No. 5 Boston Blower. Good order.
1 Gas Blast Furnace. Nearly new.
2 Jig Saws.
1 Shaper. Graham. First-class.
1 Double Head Shaper.
2 Single Head Shapers.
1 Chuck and Heads for Chair Rounds.
1 Gear Cutter, Gould. In good order.
1 200 Light Dynamo. Good order.
1 Shear and Punch combined. Light machine. New.
1 48 in. Boring Lathe. Good as new.
1 36 in. Cupola, Blower, Rattler and Ladles. Good.
1 Power Chain Hoist, with Heavy Chain, complete.
1 36 in. Band Saw.
1 24 in. Buzz Planer. Nearly new.
1 24 in. Pony Planer.
1 Boring Machine.
2 Wood Frame Saw Tables.
2 Horizontal Boring Machines.
1 Rowley & Hermance Three-Sided Moulder
1 H. B. Smith Double Head Tenoning Machine.
1 24-in. Planer and Matcher.
1 Rowley & Hermance Power Mortiser.
1 H. B. Smith Three-Sided Moulder.
1 Sand Belt Machine.
2 Sand Drums.
1 Knapp Dovetailing Machine.
1 Steam Pump. Good order.

Send for Complete List of New and Second-Hand Machinery for Prompt Delivery.

W. P. DAVIS,
Rochester, N. Y.

FOR SALE.

The entire outfit of two well equipped MACHINE SHOPS, which we have just purchased.

The lot comprises Drill Presses, Engine and Hand Lathes, Planers, Shapers. Plain and Universal Millers, Cutter, Surface and Universal Grinding Machines, Screw Machines, Tapping and Centering Machines, Power Presses, Gear Cutters, Squaring Shears, Grindstones, Forges and Anvils. All can be seen in our warerooms.

Write for photographs, description and prices of tools wanted.

THE CARVIN MACHINE CO.,
Laight and Canal Sts.,
NEW YORK.

FOR SALE.

1 25 horse-power Engine; nearly new.
1 25 horse-power Boiler; complete.
1 72 in., 8-ft. bed Boring Lathe.
1 24 in., 17 ft. bed Engine Lathe.
The above goods will be sold low.
A. BUCH'S SONS,
Elizabethtown, Pa.

WANTED TO BUY.

1 A 24-in. x 8 ft. Engine Lathe and a machine suitable for tapping 1½-in. pipe fittings. Both to be second-hand and in good order at low price.
NAUGATUCK MALLEABLE IRON CO.,
Naugatuck, Conn.

Great Bargains

Must be Sold and Removed.

16 in x 30 in. Horizontal Engine.
18 in. x 36 in. Horizontal Engine.
24 in. x 36 in. Horizontal Engine.
19½ in. x 48 in. Beam Engine, with Knowles Condenser.

Write us for what you want.

LOVEGROVE & CO.,
Third and Quarry Sts., Philadelphia, Pa.

SECOND-HAND MACHINERY.

One Putnam Planer, 26 in. x 26 in. x 8 ft. In fine order.
One Pond Machine Tool Co. Iron Planer, 40 in. x 40 in. x 24 ft., with two heads. In fine order.
One Ferris & Miles 500-lb. Steam Hammer.
One Belden 100-lb. Upright Power Hammer.
One 60-lb. Bradley Helve Hammer.
One American Tool Co. No. 2 Cabinet Turret Lathe, with slide rest. In fine order.
One Pratt & Whitney 36-in. Gap Chucking Lathe.
One Pratt & Whitney No. 3 Lincoln Miller. In fine order.
Send for circular of Second-hand Machinery in stock.

HILL, CLARKE & CO.,
156 Oliver St., Boston, Mass.
12 and 14 South Canal St., Chicago, Ill.

SECOND-HAND.

No. 21, 6 H.-P. Vertical Boiler.
No. 21, 6 H.-P. " "
No. 22, 10 H.-P. " "
No. 23, 18 H.-P. " "
No. 24, 8 H.-P. Engine.
All above complete with fittings. Nos. 20 and 22 have 20-ft. stack.

THE SCRANTON SUPPLY AND MACHINERY CO.,
Scranton, Pa.

FOR SALE.

Four Cylinder Boilers good for Stacks, 15 ft. long, 6 ft. diameter. Address
"BOILER,"
Office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

FOR SALE CHEAP.

One second-hand 10 in. x 20 in. Twiss Engine, with automatic cut off; all in good repair.
NAUGATUCK MALLEABLE IRON CO.,
Naugatuck, Conn.

For Sale, Cheap.

200 tons of 60-pound Second-hand Steel Rails.

Suitable for relaying. F.o.b. cars Buffalo, N. Y. For prices, &c., address
J. H. RICHARDSON & CO.,
Pittsburgh, Pa.

FOR SALE.

One Stationary Double Cylinder Steam Crane, capacity 5 tons.
One Bookwalter Steel Converter, complete.
CHICAGO HORSE SHOE CO., E. Chicago, Ind.

Contractors' Outfits

30 Dump Cars, 36-in. gauge.
2 Saddle Tank Locomotives, 36-in. gauge.
4 Saddle Tank Locomotives, standard gauge.
10 Flat Cars, 36-in. gauge.
3 Steam Drills, with tripods and steels.
5 Stone Crushers various patterns.
1 Road Roller for horses.
10 Hoisting Engines, various sizes.
Also Boilers, Engines and Machinery of all sorts. Send for new list.

THOS. P. CONARD,
206 Walnut Place, Philadelphia, Pa.

FOR SALE.

Second-hand
BOLT MACHINERY
of the Latest Pattern.

1 4-spindle Auto. Machine, to cut up to 1½-in. bolts.
1 4-spindle Auto. Machine, to cut up to 1¼-in. bolts.
1 2-spindle National, to cut up to 2-in. bolts.
1 Special Machine to make hook bolts such as are used by the N. Y. Elevated R.R; will make 1000 per day.
Revolving Forge, Furnaces, &c. Also
Second-hand Engines, Boilers and Pumps.

MARVIN BRIGGS,
61-63 Rutgers Slip, New York.
Send for list.

SECOND-HAND MACHINERY.

Boring Mill, 10 ft. 4 in. swing, 56 in. under cross rail, table 7 ft. 6 in. in diameter.

Boring Mill, 8 ft. 4 in. swing, 48 in. under cross rail, table 6 ft. 6 in. in diameter, two heads on cross rail.

One 7-ft. **Engine Lathe,** 7 ft. between centers, face plate 6 ft. 3 in. in diameter.

76-in. **Planer,** 13 ft. long; heavy and powerful.

48-in. **Car Wheel Borer.**
Axle Lathe.

Write for photographs and further particulars.

Eastern Branch,
NILES TOOL WORKS CO.,
138 Liberty St., New York

THE FOLLOWING Second-hand Engines, Boilers and Machinery of the best modern make, guaranteed in perfect condition:
One 75 H.-P and one 150 H.-P. Corliss engine. One 40 H.-P. automatic engine. 10 H.-P. to 100 H.-P. horizontal slide valve engines. 8 H.-P. to 60 H.-P. vertical engines. 2 H.-P. to 8 H.-P. Baxter portable engines. One 4 H.-P. and one 8 H.-P. yacht engine. 10 H.-P. to 20 H.-P. hoisting engines with boilers. 10 H.-P. to 60 H.-P. vertical and horizontal boilers. Six steam pumps of different sizes. One 26-in. hydro extractor or whizzer. One No. 8 Jones & Lamson screw machine. One No. 4 Windsor turret lathe. One 24 in. x 16 ft. engine lathe. One 22 in. x 20 ft. engine lathe. One 20 in. x 8 ft. engine lathe; new, cheap. One 15-in. and one 13 in. engine lathe; new, cheap. Two 16 in. x 6 ft. Blair engine lathes; new, cheap. Two 20 in. x 6 ft. turning lathes; 1½-in. hollow spindles, rod feed, with taper attachments. One 15-in. shaper. One 22 in. x 4 ft. planer. Shears for cutting ½-in. iron. Two grinders for twist drills. One large Springfield tool grinder. 25-lb. Bradley and 10-lb. Horchkiss hammers. 42-in. Gleason band saw, 15-in. jointer. New ammonia compressor and engine for ice making, 15 to 20 tons capacity.
Large stock of new engines, boilers, machinists tools and supplies. Catalogues.
FRANK TOOMEY, 131 North 3d St., Philadelphia.

SOME BARGAINS HERE.

1 32 x 32 x 9 New Haven Planer
1 Hendey Shaper, 15 in. stroke, imp. vise; new.
1 30 x 30 x 6 New Haven Planer.
1 14 x 6 Screw Cutting Engine Lathe; new.
1 26-in. Diamond Auto. Knife Grinder, used 1 month.
1 26-in. " " Face " " " "
1 No. 1 " Universal Face and Angle Grinder.
1 3-Spindle Garvin Drill Press used 1 month.
WANTED.—Good second-hand "A, 3" or "4" Otis or other good make of Heater.
And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,**
39, 41 and 43 Central Ave., Rochester, N. Y.

FOR SALE.

Corliss Vertical Engine, cylinder 32 x 60, latest pattern, high speed; suitable for rolling mill or electric light work. Address
NATHAN BENHAM, Hartford, Conn.

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CORLISS,

Wright, Porter-Allen, Buckeye and Slide Valve Engines, Boilers, Pumps, &c.

2 30 x 72 Corliss Engines.
1 30 x 60 Corliss Engine.
1 26 x 60 Corliss Engine.
1 26 x 48 Corliss Engine.
1 23 x 36 Corliss Engine.
1 16 x 36 Corliss Engine.
1 14 x 42 Corliss Engine.
1 14 x 36 Corliss Engine.
1 12 x 24 Corliss Engine.
1 pair 26 x 60 Corliss Eng.
1 8 ft & 1 9 ft. Fan Blower.
1 10 x 6 x 12 Blake Pump.
1 Blake Pump, 6 x 4 x 7.
1 Blake Pump, No. 000.
1 12 x 7 x 12 Niagara Pump.
1 8 x 8 x 18 Cameron Pump.
2 Centrifugal Pumps.
1 No 2 Guild & Garrison Pump.
1 Deepwell Pump, 7 x 10 cyl.
1 30 in. Corn Mill and Emery Grinder.
1 Corliss Condenser, 600.
2 Bulkley Condensers, 500.
1 Blake Crusher 10 x 7.
1 5½ ft. x 14 ft. Tubular Boiler.
1 30 H.-P. Marine Boiler.
1 Brennan Crusher, 8 x 25.
2 Platform Scales.
1 11 x 30 Buckeye Engine.
1 14 x 28 Buckeye Engine.
1 22 x 48 Buckeye Engine.
1 14 x 30 Porter-Allen Eng.
1 11 x 16 Porter-Allen Eng.
1 9½ x 12 Armington & Sims Engine.
1 8 x 10 Valley Mch. Co. Engine.
2 11 x 20 Crummer Engines.
1 60 H.-P. Westinghouse Engine.
1 75 H. P. Westinghouse Engine.
1 28 x 48 Slide Valve Eng.
1 18 x 36 Slide Valve Eng.
1 17 x 42 Slide Valve Eng.
1 16 x 36 Slide Valve Eng.
1 14 x 18 Slide Valve Eng.
1 13 x 24 Slide Valve Eng.
1 11 x 20 Slide Valve Eng.
2 20 x 48 Wright Engines.
100 ft. of 7-in. Wrought-Iron Pipe.
1 Bogardus Mill.
1 Sawdust Feeder.
Boiler Iron Tanks.
1 Logging Locomotive.
1 8 x 8 Vertical Engine.
1 Duplex Fire Pump.

G. M. CLAPP, 74 Cortlandt St., New York.

FOR SALE.

BAKER BLOWERS. Nos. 1, 3, 4, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 5, 7 and 8.
2 12 and 1 15 H.-P. Horizontal Boilers; new, very cheap. 10 in. x 7 in. Blake Crusher; equal new. Corliss Engine, band wheel in halves, 12 ft. x 24 in. x 9 in. hole. 1 large Boomer & Boschert Press. 1 Niagara Fly Wheel Pump, 14 in. x 7 in. x 10 in., brass lined.
Purchasers of machinery and those who have it for sale will do well to correspond with C. R. BIGELOW, Machinery Expert and Appraiser, 45 Dey St., New York City.

OLD ROLLS AND HEAVY CASTINGS.

About 100 tons for sale. Party desiring them please state delivery point.

C. W. SCHULTZ & CO.,
308 Walnut St., PHILADELPHIA.

SECOND-HAND TOOLS.

1 Putnam Car Axle Lathe. New.
1 Cold Sawing Machine for iron and steel. New.
1 Jones & Lamson No. 3 Plain Screw Machine. Second hand.
1 Parham Plain Screw Machine. Second hand.
1 Jones & Lamson 13-in. Swing Turret Chucking Lathe.
1 Brown & Sharpe No. 2 Screw Machine, wire feed.
The above Tools can be had at very low prices.

DANIEL KELLY,
51 N. 7th St., Philadelphia.

New York Safety Engine, 9 x 12.
Upright Drill, 20-in swing.
Plain Engine, 12 x 30.
Belt Wheel, 8 ft. diam., 20 in. face, 7 in. bore.
Belt Wheel, 10 ft. diam., 13 in. face, 6½ in. bore; split.
Belt Wheel, 11 ft. diam., 18 in. face, 13 in. bore; split.
Large assortment New and Second-hand Machinery, Shafting, Pulleys, Belting, Tools, Iron, &c.

H. B. BIRTWELL,
343 North 3d St., Philadelphia.

Great Bargain.

A full set of Automatic Cut-off Engine Patterns, with drawings, wood cuts and patent right to manufacture; are almost new, and were made by the finest workmen. If sold at once will let them go at a sacrifice. Address "ENGINE," No. 112,
office of *The Iron Age*, 96-102 Reade street, New York.

FOR SALE.

2 5 H.-P. Gas Engines.
1 "O" Knowles Pump.
1 7 x 20 Lathe.
1 Boiler Upright, 24 x 72.
10 New Road Scrapers.
1 Pair Cornish Rolls, good as new.
2 Lewis Bolt Headers.
1 Alligator Shear.

H. H. MANSFIELD, 126 Liberty St., New York.

FOR SALE CHEAP.

One 12-ton Harrisburg Steam Steel Roller.
One 20-ton Allen-Porter " " "
One 20-ton Ross " " "
One Locomotive, 3 ft. 3 gauge.
30 Side Dump Cars.
100 ton 35-lb. Steel "T" Relay Rail and Splices.

DAVIS, KELLY & CO.,
"The Commerce." Louisville, Ky

FOR SALE.

Large lot of Loco. Boilers,
50 to 100 H.-P., in first-class order.

Can furnish stacks, grates and all fittings to suit purchasers.

CHESTER BERTOLETTE & CO.,
Norristown, Pa.

FOR SALE.

PUMPS, ENGINE & BLOWER.

1 Cameron Pump, No. 12 Special.
2 Guild & Garrison Pumps, No. 3.
2 Small Pumps.
1 8 in. x 12 in. Vertical Engine.
1 Dimpfel's Blower, 5 ft. x 20 in.

DAN'L W. RICHARDS & Co.,
86-92 Mangin St., New York.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

BUSSENIUS & CUNLIFFE,
12th and Washington Ave., Philadelphia.

FOR SALE.

CRANK and GEARED SHAPERS.

Write us for Bargains.

J. STEPTOE & CO., Cincinnati, O.

FOR SALE.

25 lb. section iron T Rails in good condition for relaying.

WM. H. PERRY & CO.,
Providence. R. I.

Squeezer For Sale.

Extra strong, with engine attached 17 x 24 in. Weight of Squeezer alone 96,000 lbs. In use two years. For further particulars address

P. O. BOX 205,
Pittsburgh, Pa.

A RARE CHANCE.

I offer for sale the entire plant of a small manufacturing concern making patented hardware specialties, such as wrenches, saw sets, screw drivers, &c.

This offer includes **Machinery and Tools,** all in good order and in daily use; **Stock of Goods,** both finished and unfinished; **Patents,** some fifteen in number; **Contracts,** and **Goodwill** of business.

This is a **good opportunity** for any firm or corporation to **increase** their **business** by adding a line of **desirable goods** already **introduced** and known to the trade, and for which there is a steadily **increasing sale,** many of them being **illustrated** in the leading hardware **catalogues** of the **country.**

The **plant** is offered for sale because the **manager** and **financial man** is **unable** to attend to the **business** because of **sickness.** None but principals and parties meaning business need apply, as the matter must be closed at an early day. Address

"T. T.," Box 224,
New Haven, Conn.

MACHINERY,

NEW AND SECOND-HAND, FOR SALE.

LATHES.

80 in. x 18½ ft., Geared Face Plate.
60 in. x 45 ft., " " " Double Lathe, complete.
52 in. x 35 ft., Rod Feed only; one end has Hor. Boring Machine.
48 in. x 27 ft., cheap.
36 in. x 18 ft., Geared Face Plate.
36 in. x 16 ft.
33 in. x 27 ft.
30 in. x 28 ft., Shafting Lathe, Pond.
28 in. x 22 ft., cheap.
24 in. x 10 ft., "
10 in. x 4 ft., Al.
32 in. x 16 ft.
25 in. x 12, 16, 20 and 24 ft.
22 in. x 10 ft.
21 in. x 8, 10 and 12 ft.
20 in. x 5, 6 and 10 ft.
18 in. x 6, 7 and 8 ft.
17 in. x 6 and 7 ft.
15 in. x 6 ft.
14 in. x 6 ft.

PLANERS, SHAPERS, SLOTTERS.

3 ft. x 15 in.
4 ft. x 20 in.
5 ft. x 22 in.
5 ft. x 24 in.
6 ft. x 24 in.
5 ft. x 25 in.
5 ft. x 26 in.
7 ft. x 26 in.
7 ft. x 30 in.
8 ft. x 31 in.
12 ft. x 36 in.
16 ft. x 42 in.
22 ft. x 62 in.
24½ ft. x 54 in.
9, 12, 15, 16 in. stroke Shapers.
15, 20, 26 in. stroke Shapers.
8, 13 in. stroke Slotters.

Lincoln Millers Gang Drills, Screw Machines.
Steam Hammers, 100, 150, 1000 and 3000 lbs.
Drill Presses, 20, 24, 26, 28, 30, 44 in., Upright.
Bolt Cutters, 1¼, 1½ in.
Flanging Machine, O'Brien Pat., for Circular Boiler Heads.
Gear Molding Machine, Scott's Pat., 3 different sizes.
Bliss Punching Press, No. 75.
Corliss Engines, 12 in. x 24 in., 14 in. x 36 in., and 16 in. x 42 in.
Brown Engine, 16 in. x 48 in. Whitehill, 11 in. x 18 in.
Vertical Engine, 13 in. x 16 in., N. Y. Safety Steam Power Co.
Send for latest list.

GEO. PLACE MACHINE CO.,
120 Broadway, New York.

For Sale or Rent.

Rolling Mill and Nail Factory of the Lewisburg Iron and Steel Co. Mill supplied with water, slate roof buildings, 2 engines, 4 large tubular boilers, 7 puddling furnaces, 1 large heating furnace with boiler over same, 42 nail machines, 2 trains of rolls, and other machinery. Connection with Pennsylvania R.R. and Philadelphia & Reading R.R. by switches on both sides of mill. Works now in operation. Address

ALFRED HAYES, Secretary,
Lewisburg, Union Co., Pa.

FOR SALE.

One 16 in. x 24 in. Standard Gauge Locomotive.
One 15 in. x 20 in. Standard Gauge Locomotive.
Three 7 in. x 12 in.-36-in. Gauge Locomotives.
Fire Box Boilers from 15 to 100 horse-power in stock; Engines, Boilers, Shears, Hoisting Engines, Pile Drivers' and Contractors' Supplies.

THOMAS CARLIN'S SONS,
Allegheny, Pa.

---

4 BOILERS.

Four second-hand 75 H.-P. Double-Deck Boilers, with all fittings and fixtures. In first-class condition. Cheap.
Two 2-flue Boilers, 48 in. diam. x 32 ft. long, in prime condition. Cheap.
One 16 x 22 Side Crank Engine.
One 16 x 36 Side Crank Engine.
Full line of new and second-hand Boilers and Engines always on hand.
H. M. Sciple & Co., 3d and Arch Sts., Philadelphia, Pa.

Relaying Rails and Narrow Gauge Equipment For Sale Cheap.

100 tons I Beams from 7 to 15 in. and 15 to 28 ft. long.
200 tons 35 pound Iron Tee Rails.
200 " 30 " " " " with Splices.
300 " 48 " " " " "
500 " 52 " Johnson Girder Steel Rails.
1000 tons Flat Rails, all weights.
50,000 lbs. Standard Binding Twine, and about
30,000 lbs. Cotton and Manilla Rope.
200 Narrow Gauge Flat, Coal, Box and Stock Cars; 4 Coaches, 4 Mail and Baggage, 10 Boarding and 20 Hand and Push Cars, 13 Standard Gauge Locomotives.
I am in the market at all times to buy or sell anything in the way of second-hand Equipment Rails, also Scrap. In answering, kindly mention this paper.

L. K. HIRSCH,
549 Rookery, Chicago, Ill.

STEAM PUMPS.

All inquiries for second hand pumps, of which we always have several on hand, of our own and other makes, will have prompt attention. For catalogues of the Hooker Patent Steam Pumps and full information in regard to steam pumps address

HOOKER-COLVILLE STEAM PUMP CO.,

30 W. Randolph St., CHICAGO. **2d and Carr Sts. ST. LOUIS.**

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WHERE TO LOCATE NEW FACTORIES.

The Illinois Central Railroad Company is desirous of calling the attention of capitalists and manufacturers to the advantages possessed by the different cities and towns on their Southern Lines and on the lines of the Yazoo & Mississippi Valley Railroad Company in the shape of

UNLIMITED RAW MATERIAL, PROXIMITY TO MARKETS, CHEAP LABOR,

Fuel, etc., and believes that it needs but a presentation of their merits to attract the careful attention of all interested in converting the raw materials to be found on their lines into the finished product. Prominent among these are cotton, hard and soft wood, clay, fruits, vegetables, etc. A descriptive pamphlet of 150 pages, entitled "Where to Locate New Factories," has been issued by the Company, and a copy will be sent free on application to the undersigned, who will also give any further information as to

Inducements Offered

by the different localities for desired industries.

Individuals or companies wishing to embark capital in cotton, clay, wood-working, canning or other industries, can find a profitable field and hearty co-operation. For particulars address GEO. C. POWER, Industrial Commissioner I. C. R. R., 58 Michigan Ave., Chicago.

FOR SALE OR RENT.

Manufacturing Property.

Having purchased the Auburn Manufacturing Company's plant, with greater facilities for manufacturing carriage forgings, which my increasing trade demands, I offer my former plant for sale or rent, which consists of two-story stone and wood building, 60 x 30, and three-story stone and brick building, 75 x 40. Also forge shop, 22-ft. posts, 150 x 54, with large double windows between each bent. 50 x 30 boiler house. Splendid water power, 11 ft. head.

One 64-in. American Turbine.
One 24-in. Little Giant Turbine.
200 ft. 2¾ Cold Rolled Iron Shafting.
40 ft. 2¼ Cold Rolled Iron Shafting.
60 ft. 2-in. Cold Rolled Iron Shafting.

Furnished with self-oiling boxes. Water wheel governor; 4-ton Buffalo Scales. The premises cover about 2½ acres. Shipping facilities of the best. Located near N. Y. Central and Philadelphia and Reading depots. Will be sold cheap and on easy terms or rented. For particulars address

RICHARD ECCLES, Auburn, N. Y.

WANTED.

Responsible parties to manufacture and sell on royalty, a cheap portable steel or iron ***CULVERT BRIDGE;*** it is adapted to all small streams, runs, etc., in roads, streets, ***RAILROADS,*** etc.; improved roads is the order of the day; use this bridge, put it below the level of the road, cover it over and thus prevent jarring and wear and tear of vehicles, etc Apply to W. A. NICHOLS,

Girard Building, Philadelphia, Pa.

FOR SALE.

Hardware business in a city of 40,000. Best location. Stock will invoice about $10,000. Annual sales, $30,000, which can be increased readily. Present owner is engaged in other business and can give this no personal attention. Favorable terms. Address

J. C. PETERS,
Fort Wayne, Ind.

A MANUFACTURER with well equipped nearby factory, modern machinery and methods, has capacity to make for responsible parties a small engine, motor, dynamo, sewing machine or like article. Correspondence solicited only with parties wanting first-class work. Can handle a large contract. "MANUFACTURER," No. 420, office of *The Iron Age*, 96-102 Reade St., N. Y.

Half Store For Rent.

One-half of Store, basement and sub-basement, No. 20 Murray St. Will rent one-half store alone, or will rent office and desk room. Apply to

D. A. GOODRICH, 55 Fulton St., New York.

840 Acres Fine TIMBER AND PHOSPHATE LAND,

Citrus County, Fla., near railroad, **For Sale, or Exchange** for merchandise; hardware or furniture preferred.

G. H. WATTS,
DeLand, Fla.

WANTED.

Foundry Contracts to be completed before September 1st. Capacity of works, 9 tons per day. Can make close prices and prompt shipment.

FRANK C. PATTEN CO.,
Sycamore, Ill.

Bessemer Iron Ore Mine.

In New York State, near railroad, for sale.

Analysis by Andrew S. McCreath, Harrisburg, Pa.:

Titanic acid	none.
Metallic iron	66.600.
Phosphorus	0.006.

Address

"ORE MINE,"

office of *The Iron Age*, 96-102 Reade St., N. Y.

Valuable Iron Works FOR SALE,

To close an Estate.

The undersigned, Executor of L. M. Dayton, deceased, offers at private sale the **Anchor Iron and Steel Works** and the **American Nut and Bolt Works,** situate in Newport, Kentucky.

The whole property has a frontage of 500 feet on Front street, in that city, and extends back over 200 feet to the Ohio River.

The rolling mill has a capacity of 6000 tons bar and 1200 tons light or steel sheet per year.

The Nut and Bolt Works is doing a business of from $400,000 to $500,000 per year. Both plants are in good running order, with a large and valuable trade, and at present running to their full capacity. They will be sold at a sacrifice in order to close the estate of L. M. Dayton, deceased.

For further particulars apply on the premises in Newport, Kentucky, where an examination of the property can be had, or to the undersigned at his office in Cincinnati, Ohio.

JOHN W. HERRON, Executor.
Cincinnati, Ohio, April 7, 1893.

Practical Partner Wanted

with a capital of $15,000 to $20,000, to engage with the St. Thomas Pipe and Foundry Co., Ltd., in the manufacture of cast iron water and gas pipe and special castings. The company have an exceptional good location, with free water and taxes for ten years, excellent new buildings and plant costing $40,000 specially built and equipped for that purpose. To a practical man this presents a splendid opportunity, as favorable arrangements can be made with the company. Address

ST. THOMAS PIPE & FOUNDRY CO., Ltd.,
St. Thomas, Ontario.

The National Cordage Company.

NEW YORK, April 7, 1893.

The Board of Directors of this Company have this day declared the regular quarterly dividend of TWO PER CENT. on the preferred, and ONE AND ONE-HALF PER CENT. on the Common Stock of the Company, both payable on the 1st day of May next at the transfer office of the Company, 135 Front St., this city. The transfer books will close April 15, at 12 M., and reopen May 2 next at 10 A.M

G. WEAVER LOPER, Treasurer.

Second-hand Pipe For Sale.

We have about 40 or 50 tons of 1-inch second-hand Steam Pipe in first-class condition. Will sell in any quantity at $1.25 per hundred, f.o.b. cars Chicago. Call or address

Swarts Iron & Metal Co.,
551 to 557 S. State St., Chicago, Ill.

WANTED.

To furnish reasonable estimates on specialties in light metal work to order.

CLARK & COWLES, Plainville, Conn.,
Manufacturers of Clock Trimmings, Rivets, Springs, &c.

MANUFACTURING PLANT FOR SALE.

The manufacturing plant lately operated by Wharton McKnight on Penn avenue and Duquesne Way, Pittsburgh, known as the Anchor Foundry and Machine Works, consisting of a foundry and machine shop complete in every particular; a full complement of patterns tools, hoisting and traveling cranes and al other appliances; will be sold at a bargain. Immediate possession given. For information call at their office, No. 44 Penn Ave., or

McCLUNG & EVANS,
Room 86, St. Nicholas Building, Pittsburgh, Pa.

A Rare Chance.

To parties wishing to manufacture a first-class Machine Tool for the trade. Owing to limited room and a pressure of other business we have reluctantly decided to dispose of the Patterns, Drawings and Special Tools of our Upright Drill. Also the patent right on the feed motion. This machine, when first put on the market, attracted great attention and was illustrated in most of the American and foreign mechanical papers. Parties using the machines say they cannot say too much in their favor. A finished machine is included in the sale. Correspondence solicited. A catalogue giving full description sent on application.

F. W. LUSCOMB MCH. CO., New Bedford, Mass.

FOR SALE.

24 20-in. Muck Rolls.
One two-high 20-in. Muck Train.
One double three-high 20-inch Muck Train.
One large Rotary Squeezer, with spare pieces.
68 Puddling Furnaces.

All in A1 condition. Address

"ROLLING MILL,"

office of *The Iron Age*, Rooms 509-510 Hamilton Building, Pittsburgh, Pa.

Agencies Wanted.

Having a large and centrally located store, convenient to the hardware trade of New York City, would like to secure agencies for heavy hardware, pipe, iron, &c., on salary or commission. Address

CHAS. J. STEBBINS,
103 Reade St., New York.

Any Manufacturer

of Hardware or Machinists' Specialties desiring to be represented in New York City and vicinity, will find it to his interest to address

E. J. HUSSEY & CO.,
80 John St., New York.

We are centrally located, active workers and can furnish best of references.

Collections!

ATTENTION! Merchants and Manufacturers.—We collect your past due accounts. Do not let them remain too long upon your books. Our terms just and fair.

THE HARDWARE BOARD OF TRADE, Ltd.,
4 and 6 Warren street, New York.
JAS. H. GOLDEY, Treas.

CHARLES WEILAND.

I make a special business of buying and selling Job Lots of

HARDWARE AND CUTLERY.

Tools and Second Quality Files a Specialty.
Send for Catalogue,

143 Chambers St., New York.

Let Us Handle Your Goods.

Any manufacturer of staple articles can secure profitable representation with us. We will market product advantageously, having agencies in **Chicago, St. Louis, New Orleans** and **San Francisco,** and local salesmen.

UNITED STATES TACK & NAIL CO.,
Office: Room 23, No. 89 Bedford St.,
Boston, Mass.

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KOKOMO, INDIANA.

Are you a Manufacturer?

Do you expect to Manufacture?

If you have given the matter thorough consideration, you have figured the fuel cost as one of the important items of expense. Come; let us save this part of the outlay for you. Shipping facilities the very best, and every point of advantage a business man can ask in a hustling, wide-awake, modern city of 15,000 population, in the heart of the great **Gas belt** of Indiana. Write for catalogue. Address

Kokomo Enterprise Co.,
KOKOMO, IND.

Manufacturing Plant For Sale.

Constructed of brick, containing about 30,000 square feet of floor space, one story high; automatic engine, 125 horse-power, with sufficient boiler capacity for power and heating the whole premises; line shafting, japan ovens, brass foundry, plating department, &c., complete. A fine property for light manufacturing purposes. $15,000, with small down payment and terms to suit buyer at 6 per cent.; deferred payments.

W. M. LOTTRIDGE,
5 Euclid Ave., Cleveland, Ohio.

Second-hand I-BEAMS FOR SALE.

We have about 100 tons of first-class second-hand Steel Beams, extra heavy, 12 and 15 inches wide, 6, 8 and 10 feet long. Will sell cheap to any one in need of same. Call or address

Swarts Iron & Metal Co.,
551 to 557 S. State St., Chicago, Ill.

BLOWING ENGINE FOR SALE

Vertical pattern, with balanced steam slide valve gear, steam cylinder 14 in. diameter, air cylinder 40 in. diameter, stroke 24 in. 1 to 100 strokes per minute; engine new.

JAMES LEFFEL & CO., Springfield, Ohio.

Important Notice.

HAYDOCK & BISSELL,

AUCTIONEERS.

Tuesday and Wednesday, May 2d and 3d, 1893, at 10 o'clock a.m. each day.

At Nos. 12 Murray Street and 15 Park Place, New York.

BY ORDER OF

THE LALANCE & GROSJEAN M'F'G CO.,

AND

THE ST. LOUIS STAMPING CO.,

LARGE SPECIAL AND PEREMPTORY SALE

—OF—

Several Thousand Cases of

AGATE AND GRANITE WARE,

AND

BLUE and WHITE WARE, Seconds.

This Sale will be made on Ninety Days' Time **Approved Paper** for bills of 200 Dollars and over, **under 200 Dollars Net Cash.**

The goods will be sold in case lots, packed ready for shipment, and will include a full and complete line of **Tea and Coffee Pots, Dish Pans, Wash Basins, Lipped Convex and Berlin, Climax Windsor, Stew and Royal Sauce Pans and Sauce Pots, Tea Kettles, Preserving and Windsor Kettles, Butter and Milk Kettles, Straight Pots, Pails, Buckets, Milk Boilers, Fry Pans, Milk, Pudding and Bake Pans, Coffee Boilers, Stove Pots, Fish Kettles, Ladles, Dippers, Spoons, Pitchers, &c., &c.**

Would state for the information of the trade, that the goods though sold as seconds, *are serviceable* and *very salable*, in fact, for *general* use, *just* as *good* as the best ware, the imperfections usually being *almost imperceptible*.

The *entire Catalogue with Duplicates* will be sold *Without Reserve*.

The sale will be *worthy* the attention of the *largest Buyers*.

WANTED.

1 Engine Lathe, 16 or 20 in. swing.
1 Planer, 5 or 6 ft.
1 Drilling Machine.

These tools must be in first-class order and subject to our approval at Bristol, if not satisfactory to be returned.

CLAYTON BROS.,
Bristol, Conn.

Advertiser,

who is actively engaged in **Iron and Steel business, intends visiting Europe** this summer. **Solicits commissions** from firms in United States. Is thoroughly acquainted with business on both sides of Atlantic. Address

"EUROPE,"

office of *The Iron Age*, 96-102 Reade St., N. Y.

Will Trade for Hardware and Agricultural Implements.

One of the nicest Farms and Ranches in Kansas, on the Medicine River, containing about 3200 acres. There is on the place a good frame house, barn and outbuilding, a good tract of timber, good wheat and corn lands and plenty of grass. To any one wishing to go into the farming and stock business this is a rare opportunity. Will also trade a block of lots in the best city in the South for hardware. For particulars address

P. O. BOX 296, Chattanooga, Tenn.

KEEP BOOKS

by WEST'S New Original-ENTRY LEDGER.

Make the same entry but once. A Ledger in place of a full set of books. Convenient forms for all entries. Easily applied, simple, saves time. West's Self-Proving Balance locates every error. Send 2-cent stamps for illustrated 16-page pamphlet.

WOLCOTT & WEST, SYRACUSE, N. Y.

LAMBERSON'S

Old Reliable

HARDWARE PRICE BOOKS.

Send for new Illustrated Circular.

BUELL LAMBERSON,
PORTLAND, OREGON.

NEW ENGINE LATHES For Sale Cheap.

13 in.
15 "
17 "
20 "
22 "

ANY LENGTH OF BED.

Draper Machine Tool Co.,
Successors to
LATHE & MORSE TOOL CO.,
130 Gold Street. WORCESTER, MASS.

Wanted, Contracts

For building mining, blast furnace, rolling mill and factory machinery, for making castings for cable and electric railroads, or any special line of castings. Address

MAHONING FOUNDRY AND MACHINE SHOP,
Danville, Pennsylvania.

FOR SALE.

Punching and Shearing Machinery.

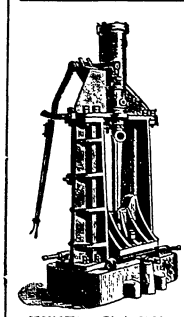
Hand and Belt Power.

Boiler Makers' Rolls.

NEW DOTY MFG. CO.,
Janesville, Wisconsin.

Saves Rewriting Names.

The Scattergood Time Record and Pay Roll Book.
(Pat. Oct. 13, 1891.)
Address for Circular to
HENRY W. SCATTERGOOD,
23 Richmond St., Phila., Pa



STEAM POWER

DROP PRESS.

NEW DESIGN.

For Stamping Sheet Metal.
Can take in Plates 26 in. wide.
Weighs 7250 lbs.

VULCAN IRON WORKS,
Milwaukee Ave. and Clinton St.,
CHICAGO.

ROLLASON GAS ENGINES.

RELIABLE AND ECONOMICAL

Send for Catalogue, etc. HAVEMEYER BLDG. NEW YORK.

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SITUATIONS WANTED

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

A ROLLER of 13 years' experience on 8, 10, 12 and 16 inch mills wants situation to run any of aforesaid trains; can give best of references for ability and sobriety, having been with one company seven years; small train preferred; will go a long distance. Address "R. E.," Box 427, office of *The Iron Age*, 96-102 Reade St., New York.

A SUCCESSFUL steel and iron Salesman would like a position to look after New York City and nearby trade; would be pleased to accept a New York agency for a bar or sheet mill; references as to ability, character and merit unquestionable. Address "BAR OR SHEET," office of *The Iron Age*, 96-102 Reade St., N. Y.

BY SALESMAN of 13 years' experience and established trade, one or two first class lines of hardware specialties for Ohio on commission; good New York reference. Address "HUSTLER" No 427, office of *The Iron Age*, 96-102 Reade St., New York.

EXPERIENCED Traveling Salesman, with established trade in four of the easternmost of the Western States, would like to add on salary or commission one more first-class line in staple goods; only manufacturers represented; state line of goods; A1 reference if desired. Address "ESTABLISHED," No. 427, office of *The Iron Age*, 96-102 Reade St., N. Y.

AS SUPERINTENDENT or Master Mechanic; press and die concern preferred; 12 years' practical experience on blanking, drawing and combination dies; now engaged; age 35; references furnished. Address "MASTER MECHANIC," office of *The Iron Age*, 96-102 Reade St., N. Y.

EXPERIENCED Mechanical Engineer, good draftsman, with executive ability, business qualifications and best references is open for engagement. Address "WIDE EXPERIENCE," office of *The Iron Age*, 96-102 Reade St., N. Y.

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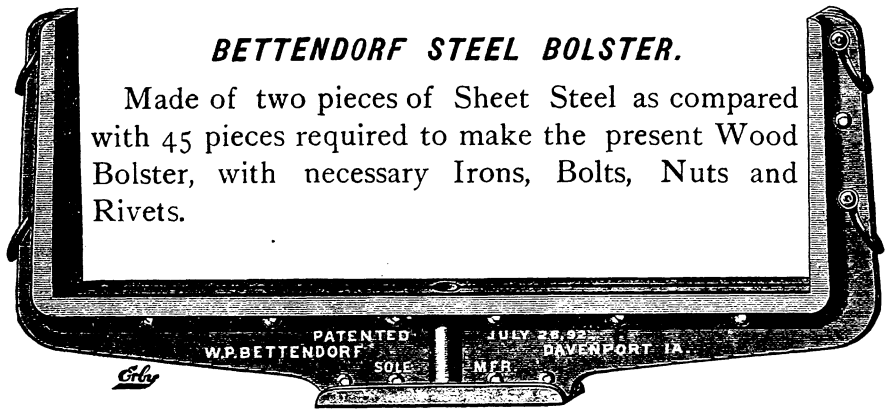
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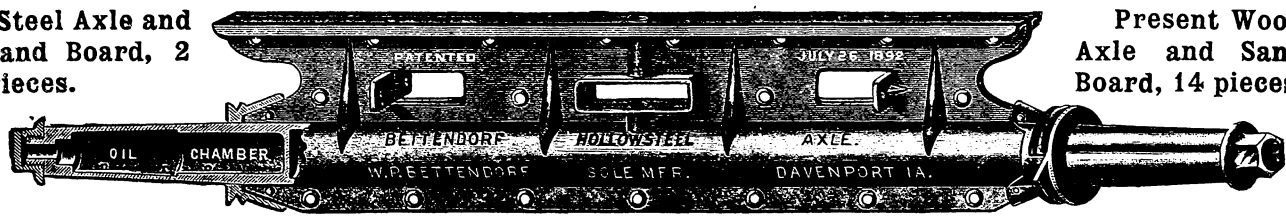


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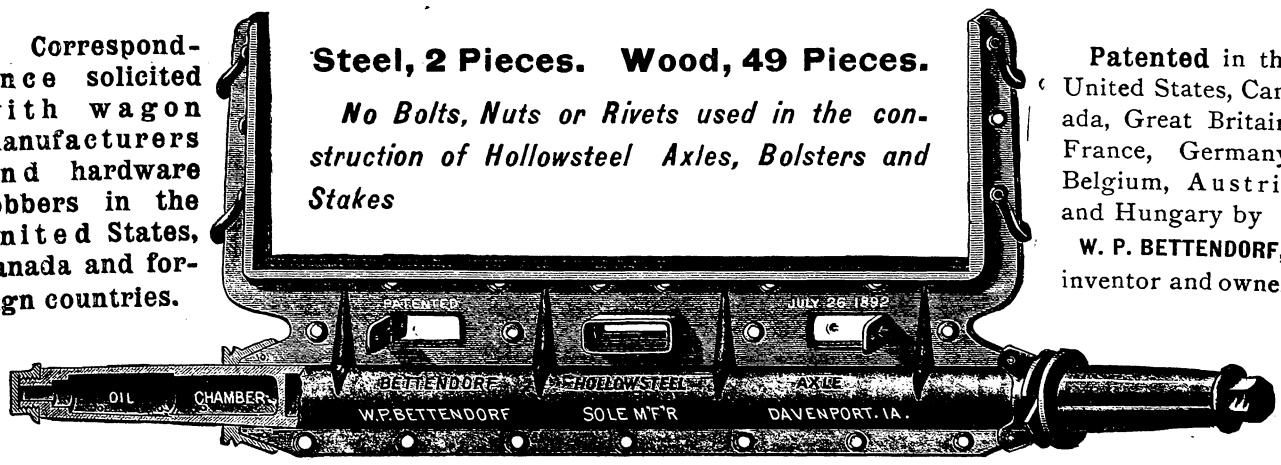
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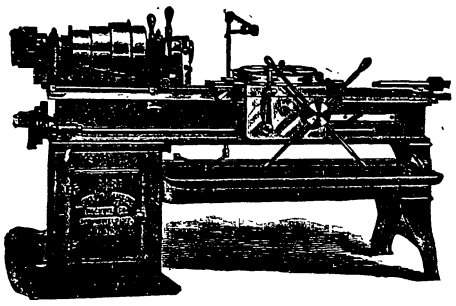
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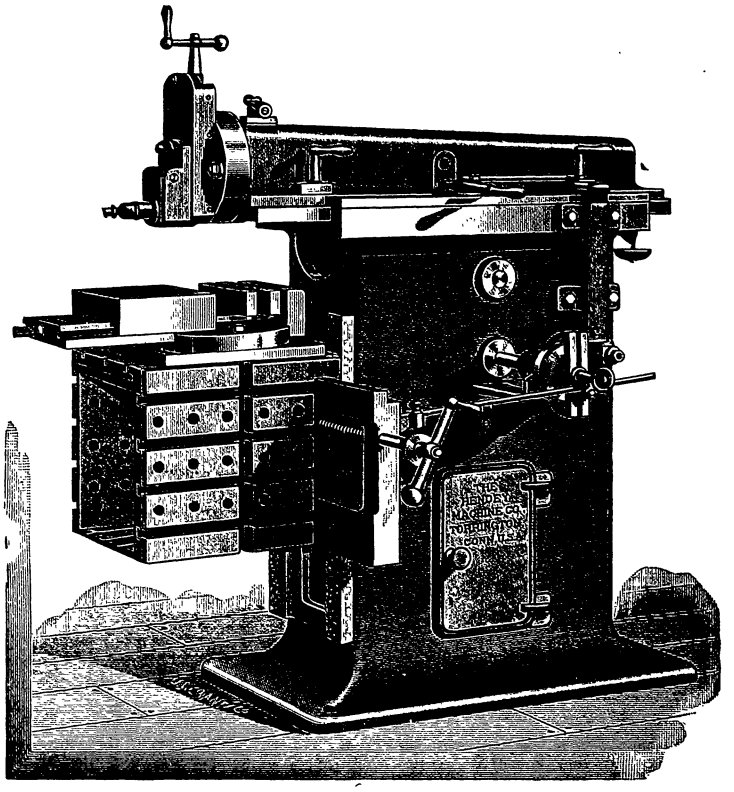
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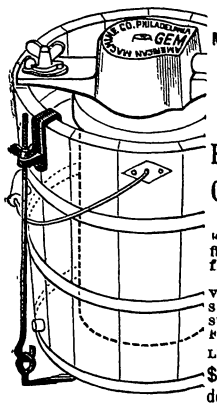
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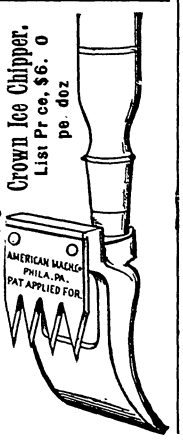


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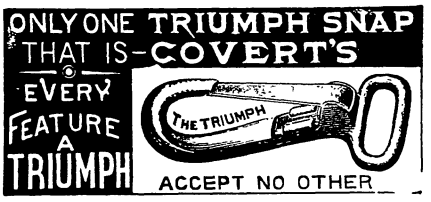


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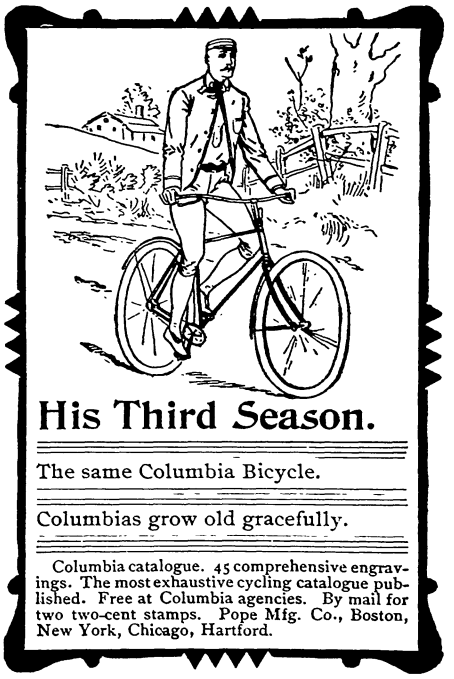
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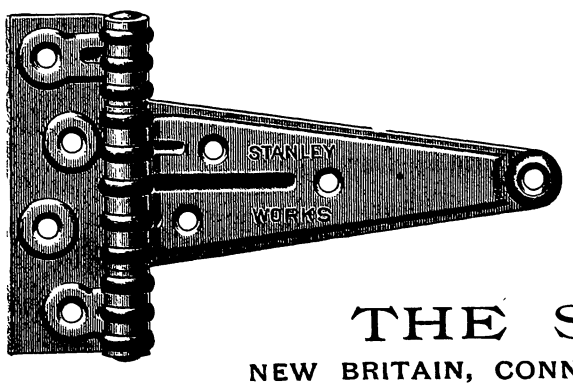


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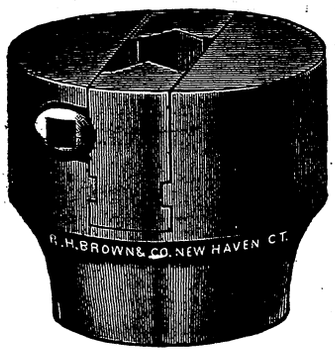
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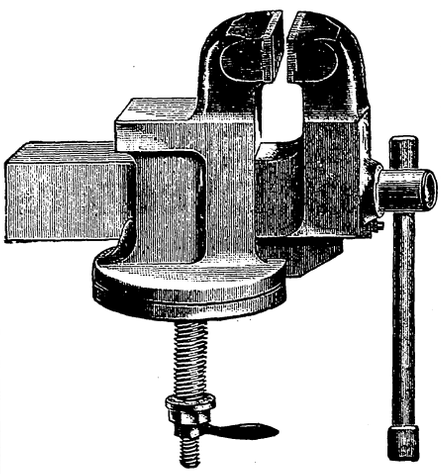
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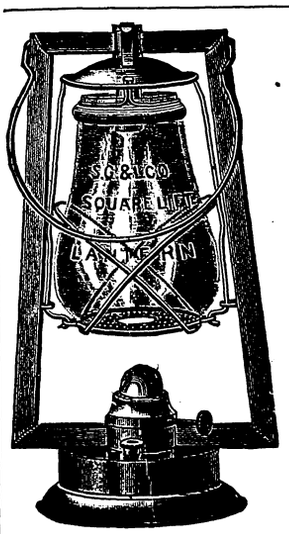
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PALMER HARDWARE MFG. CO.
TROY, N. Y.

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W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

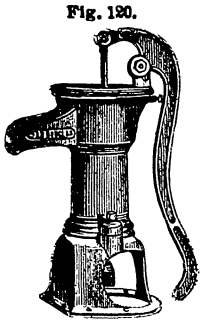
Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

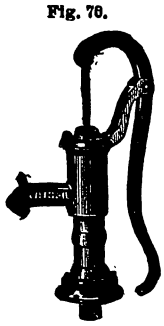
DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY, AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 120. Fig. 76.





or wherever it is desired to raise a large quantity of water by **hand power.**

The pump has large valves (accessible by hand) and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

Capacity from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

Send for Circular and Price List.

Fig. 202.

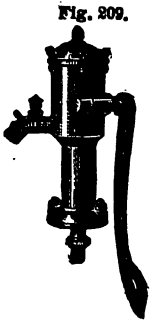
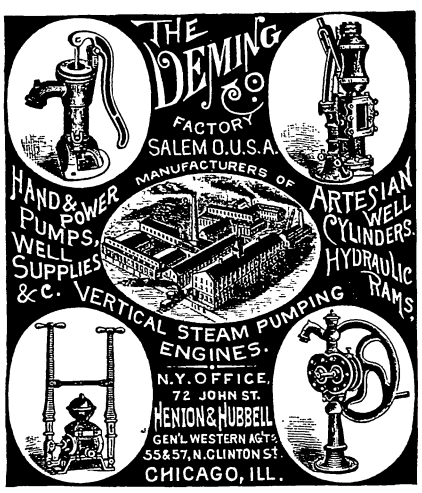


Fig. 881





TRAVERS BROS. CO.,

——MANUFACTURERS OF——

PURE MANILA AND SISAL

ROPE.

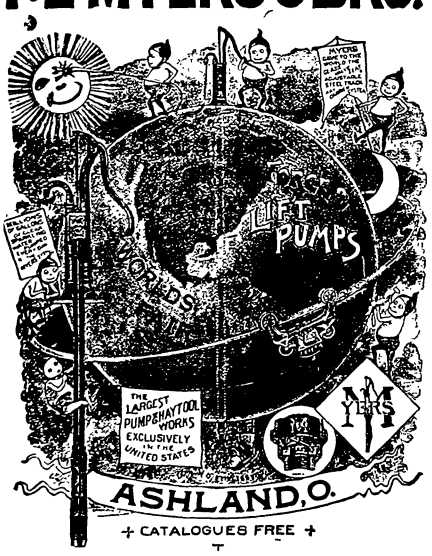
MANILA, SISAL AND MIXED

BINDER TWINE.

Mexican Hammocks, Hammock Attachments, Peerless Sash Cords, Hardware Twines, Agts. Silver Lake Sash Cords.

Office, 107 Duane St. **16 Thomas St., N. Y.**

F.E.MYERS & BRO.

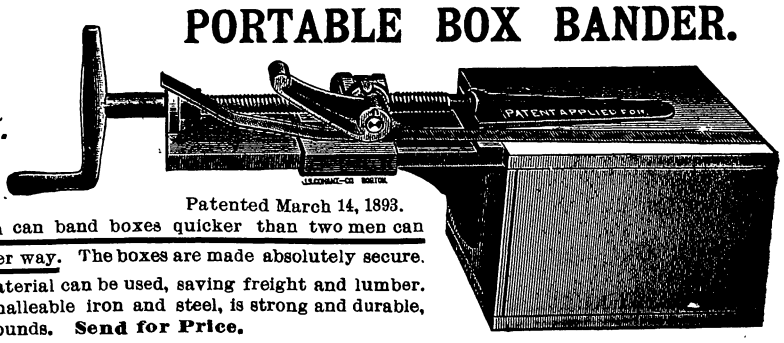


+ CATALOGUES FREE +

Ashland Pump and Hay Tool Works.

SOON PAYS FOR ITSELF.

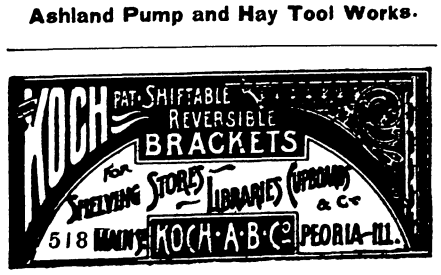
PORTABLE BOX BANDER.



Patented March 14, 1893.

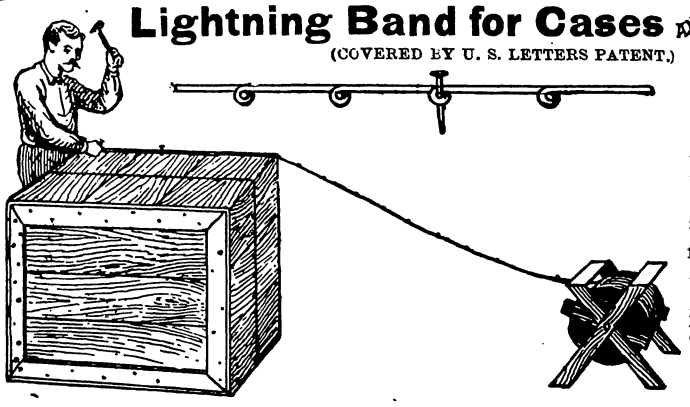
One man can band boxes quicker than two men can in any other way. The boxes are made absolutely secure. Lighter material can be used, saving freight and lumber. Made of malleable iron and steel, is strong and durable, weighs 8 pounds. **Send for Price.**

J. W. GOODELL, Manufacturer, - - BURLINGTON, VT.



Lightning Band for Cases AND Crates.

(COVERED BY U. S. LETTERS PATENT.)



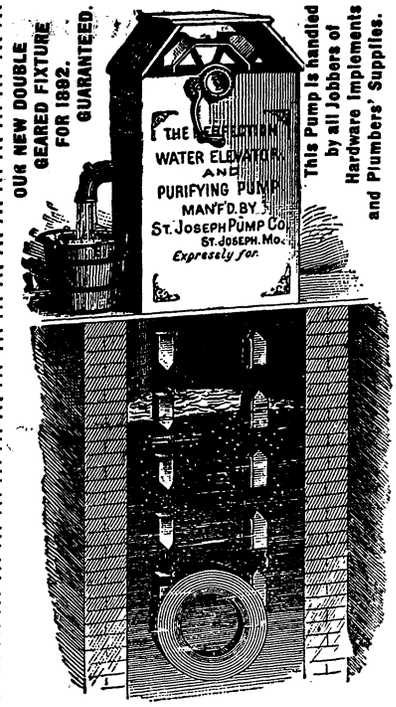
Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

PRICES:

No. 1, per reel of 2000 ft., $4.50 net.
No. 2, per reel of 2000 ft., $4.75 net.
Pliers for cutting wire, 50 cents extra.
No. 1 for cases under 300 or 400 pounds, and No. 2 for all heavier cases.

Buffalo Specialty Mfg. Co.
Sole Manufacturers,
Buffalo N. Y. U. S. A.

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Used every day in the week, brings rest on Sunday.

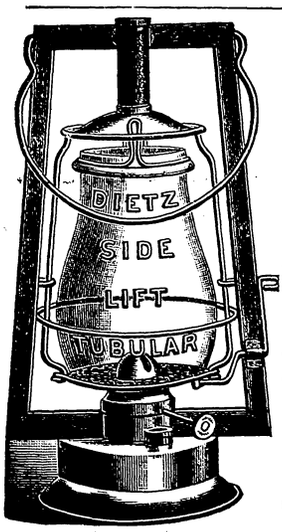
The Perfection Pump stands at the head and is the most popular pump known to the trade.

A dealer wanted in every town. Be sure you get "The Perfection." Take no other. For full information, circulars, catalogues, etc., address the manufacturers, mentioning this paper.

ST. JOSEPH PUMP CO.,

ST. JOSEPH, MO., U. S. A.

E. A. KING, Sec'y and Gen'l Manager.



ESTABLISHED 1840.

A WORD TO THE WISE IS SUFFICIENT

When you purchase a Lantern, Street Lamp or Driving Lamp, remember the

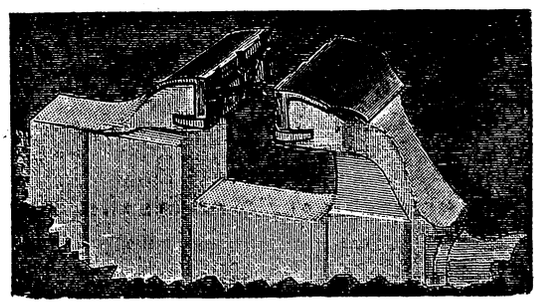
"DIETZ" Make

is the best. Our goods have stood the test of time and are safe and reliable. The name "DIETZ" is plainly stamped on them. Our specialty is **Tubular Lanterns, Street Lamps and Driving Lamps.** We make a large variety being the oldest and largest house in our line

ASK FOR THEM!

R. E. DIETZ COMPANY,

New York, 60 Laight St. U. S. A. Chicago, 25 Lake St



BINGHAM

PATENT VISE JAW CAP

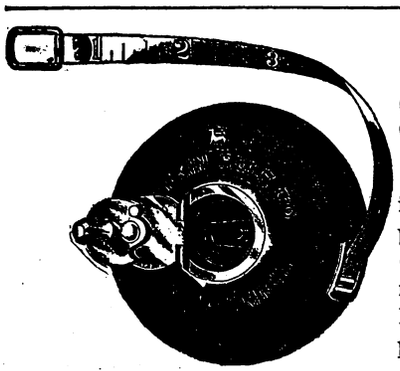
Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3⅛ inch, ...per pair, 40 cents.
4 " ..... " " 50 "
4⅛ " ..... " " 60 "

PRENTISS VISE CO

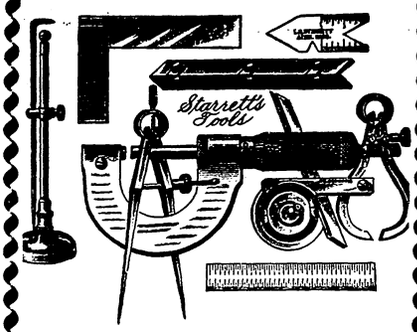
44 Barclay St., New York.



"RELIABLE" Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval.

LUFKIN RULE CO., Saginaw, Mich.



Skilled Mechanics

want tools that are warranted accurate, best in workmanship, latest in design, finest in finish.

Live Dealers

want tools they can swear by, not at. That can be relied upon to satisfy intelligent customers. That come nicely put up. That pay a good profit.

Starrett's Tools

meet the requirements of both.

SEND FOR CATALOGUE.

L. S. STARRETT

Athol, Mass., U. S. A.

LONDON AGTS: Chas. Churchill & Co., Ltd., 21 Cross St., Finsbury, E. C.

A NEW CHAIN PUMP



KEBLER'S PATENT — Galvanized Iron Tubing

FOR CHAIN PUMP.

Is guaranteed to be

THE BEST.

IT is made of best quality Galvanized Iron, which will not rust nor accumulate filth.

IT only weighs one-half pound to the foot, wet or dry, while wood tubing saturated with water weighs six pounds or more per foot.

IT will last longer than wood tubing.

IT will not freeze in any climate.

IT can be attached to any make of curb.

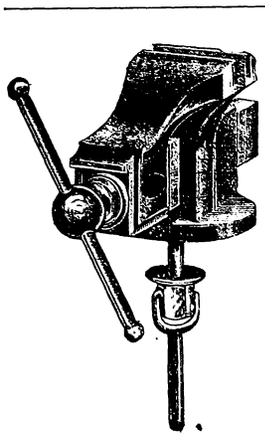
We also manufacture a Galvanized (all) Iron Curb. Address

BELLEVUE PUMP CO.,

Sole Mfrs., BELLEVUE, IOWA.

OR **A. F. SHAPLEIGH HDW. CO., St. Louis.**

Agents for Southern Territory.



HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

Hollands Mfg. Co.,

ERIE, PA.,

Manufacturers all styles VISES

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E. C. ATKINS & CO., Indianapolis, Indiana.

We make a Specialty of Fine High-Grade Saws.

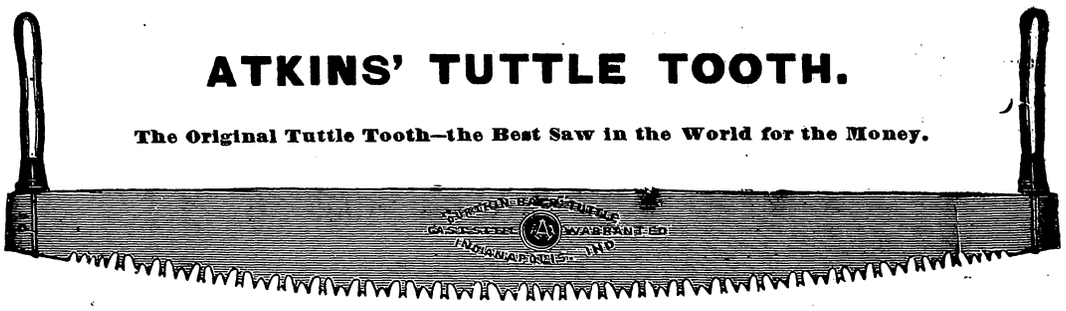
Atkins' Tuttle Tooth One-Man Saw.



BRANCH HOUSES:
Memphis, Tenn,
Chattanooga, Tenn.
Minneapolis, Minn.

ATKINS' TUTTLE TOOTH.

The Original Tuttle Tooth—the Best Saw in the World for the Money.



WRITE TO US FOR CROSS CUT SAWS.



Every Style, Kind and Variety of Tooth, Gauge and Finish.

MADE FROM CHOICEST CRUCIBLE STEEL OF OUR OWN MANUFACTURE.

ALL SAWS BEARING OUR NAME ARE FULLY WARRANTED.

NATIONAL SAW CO., 96 & 98 Reade St., New York.

Three Essentials IN THE MODERN CROSS-CUT SAW.

1.—Teeth of uniform thickness.
2.—Five Gauges taper in middle of blade.
3.—Three Gauges heavier on ends than in center of back.

For 10 YEARS the Simonds Crescent-ground Cross-cut Saw (the only Saw on the market possessing these **ESSENTIALS**) has stood out prominently in contrast with all other makes of cross-cut saws. It has been the **CRESCENT-GROUND** against the **FIELD--MODERN IDEAS** against **ANCIENT METHODS.**

TO-DAY the Crescent-ground Saw is in use in every important lumber camp in the United States. Manufacturers have endeavored to imitate it, but the Machinery producing the Saw, the Process by which it is produced, and **THE SAW,** are patented. All imitations are but involuntary acknowledgments of the **SUPERIORITY** of

THE CRESCENT-GROUND CROSS-CUT SAW.
(PATENTED DEC. 26, 1882.)

SIMONDS MFG. CO., FITCHBURG, MASS. CHICAGO, ILL.

SIMONDS SAW CO., SAN FRANCISCO, CAL. PORTLAND, ORE.

NEW ADJUSTABLE BENCH LEVEL.

WITH GROUND AND GRADUATED VIAL.

4-6 and 8 inch.

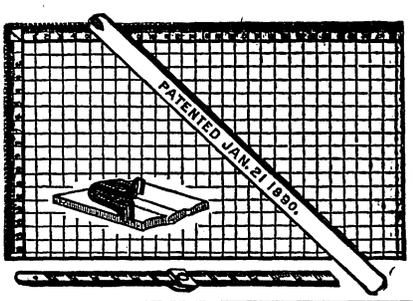


Three Sizes.

MANUFACTURED BY

C. F. RICHARDSON & SON,

ATHOL, MASS.



The Canton Glass Board.

Cuts any Fraction of an Inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles

From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

Send for Circular.

The Canton Saw Co., Canton, Ohio.

HORACE E. BRITTON, Stoughton, Mass., Manufacturer of the **HENRY'S PATENT COMBINATION HAFT,**



AND OTHER TOOL SPECIALTIES.

The Combination Haft contains six Brad-Awls, one Chisel, Screw Driver, Diamond Point Awl, Marking Awl, Tack Puller and Reamer. Send for Circular and Prices.

Full Set Sent Post-paid on receipt of $1.00. (No stamps.)

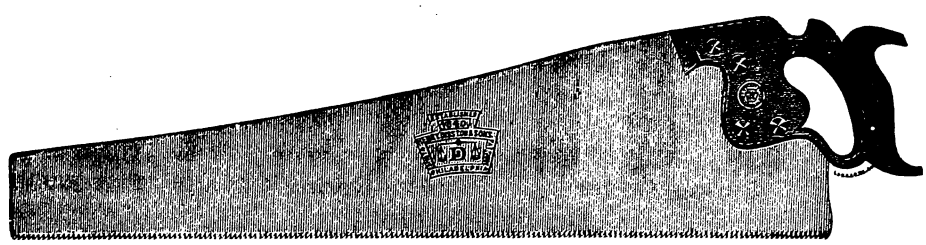
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"If you want a Saw it is best to get one with a name on it which has a reputation.
A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

THE SAWS THAT LEAD THEM ALL

"THE SAW;" HOW TO CHOOSE IT, AND HOW TO KEEP IN ORDER, Sent Free on Receipt of Name and Post Office Address.

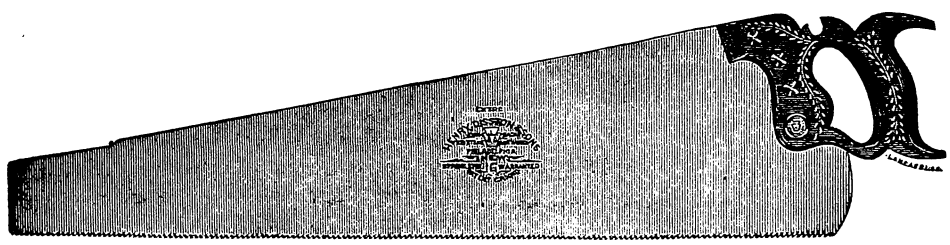
DISSTON & SONS' PATENT D-8 HAND SAW.



This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

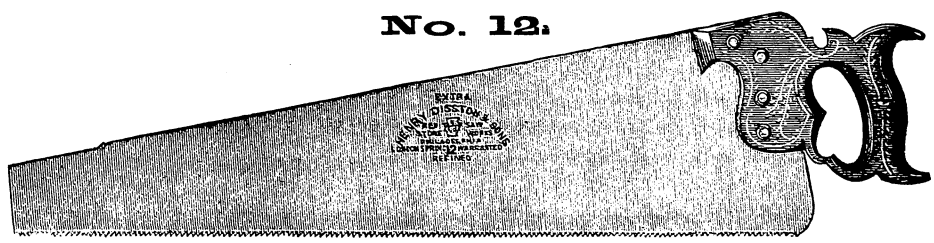
Our New No. 16 Premium Saw.



AN EXTRA FINE SAW IN EVERY RESPECT.

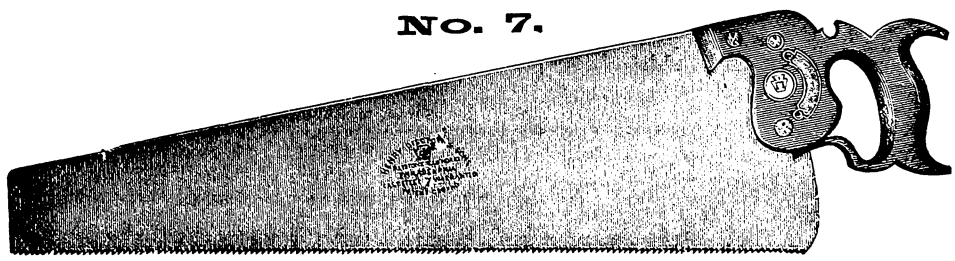
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

No. 12.



DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

No. 7.



DISSTON & SONS' Cast-Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.

"POCKET EDITION OF THE SAWYER" and "LUMBERMAN'S HAND BOOK," Sent Free on Receipt of Name and Post Office Address.

ASK YOUR DEALER TO ORDER THEM FOR YOU.

HENRY DISSTON & SONS

(INCORPORATED),

Keystone Saw, Tool, Steel and File Works, Philadelphia, Pa.

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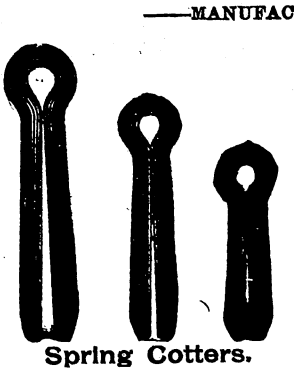
FACTORIES AT
AKRON, - OHIO.
CANTON, - OHIO.

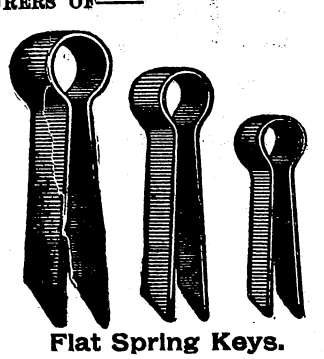
The Whitman & Barnes Mfg. Co.

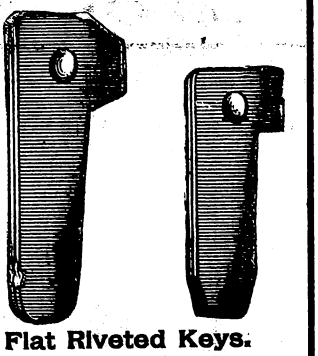
FACTORIES AT
SYRACUSE, - N. Y.
ST. CATHARINES, ONT.

—MANUFACTURERS OF—


Spring Keys.


Spring Cotters.


Flat Spring Keys.


Flat Riveted Keys.

Cellar Box Cotters.



BRANCHES AT
79, 85 W. Monroe Street, CHICAGO ILL.
1324 West 11th Street, KANSAS CITY, MO.
126 Main Street, CINCINNATI OHIO.

BRANCHES AT
82 So. Market Street, BOSTON, MASS.
1917 Market Street, PHILADELPHIA, PA.
33 Market Street, SAN FRANCISCO, CAL.

NEW YORK OFFICE, 102 CHAMBERS ST.

THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

NICHOLSON FILE CO.

PROVIDENCE, R. I.

VARIETIES FILES
3000 [X.F.] AND INCREMENT CUT FILES

Philadelphia, 1876.



McCAFFREY FILE CO.,

FIFTH and BERKS STS.,

PHILADELPHIA, PA.

For Superiority





Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

BEST CRUCIBLE STEEL.

STRONGEST TOOTH.

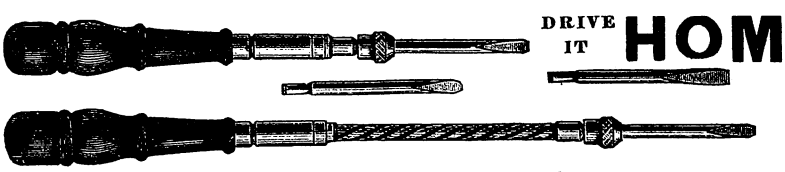
"TROJAN" HORSE RASPS.



BANKER & WHITE, TROY, N. Y.
(Troy File Works.)

LOWEST IN PRICE.

LET US QUOTE.



DRIVE IT **HOME**

Instantly—the screw, we mean, with the **HOWARD-ALLARD SCREW DRIVER.** Original Paten Spiral Clutch Triple Bit. Quality High, Price Moderate. Two Sizes, each packed in a durable box, and filled with Three Sizes Bits. You press forward on Handle, the Spiral turns the Screw. Get the Original "ALLARD" from your Jobber, or write us for Circular and Prices. Sample A1, $1.50; A2, $1.25, postage paid

SOLE AGENTS, **THE ALFORD & BERKELE CO., 77 Chambers St.,** P. O. Box 2002, **New York.**



WM. KROGSRUD,
Engraver and Die Sinker.
61 Fulton St., N. Y.,
Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters & Figures.
Burning Brands, Stencils
&c. Send for Illustrated
Catalogue.



THE W. BINGHAM CO.,

146, 148 and 150 Water St., and 97 and 99 Superior St.,

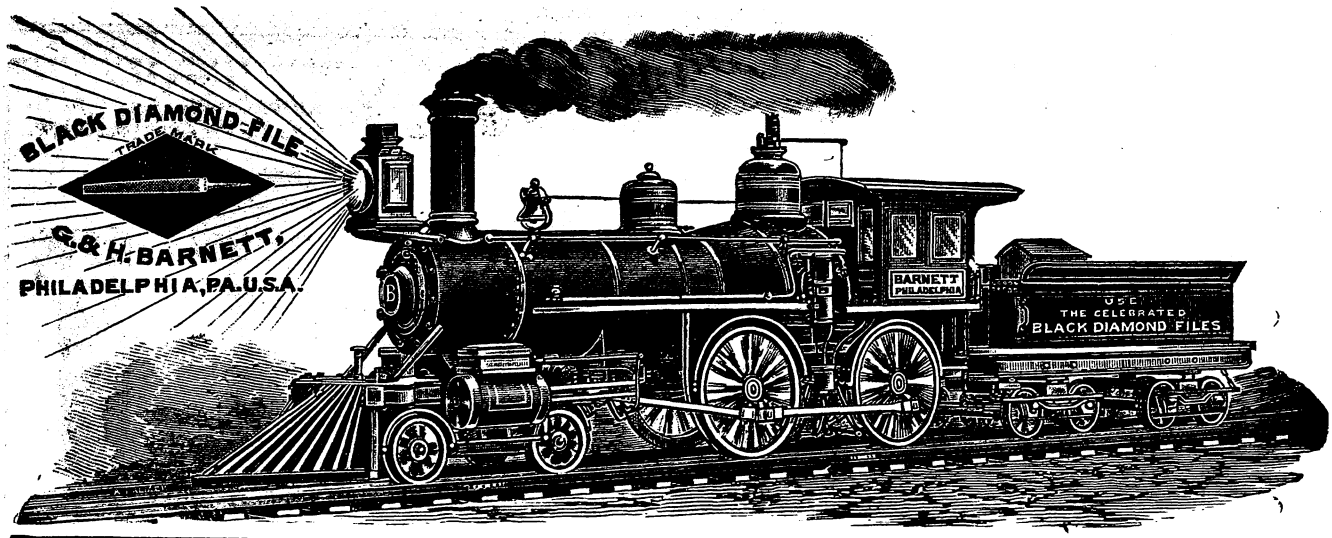
CLEVELAND, O.

LAWN MOWERS FOR 1893.

THE BINGHAM.
THE RED CLOUD,
THE TRADE XLCR MARK HIGH WHEEL.
THE DIAMOND HIGH GRASS.
THE PHILADELPHIA.

WRITE FOR PRICES.

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J. M. KING & CO.,

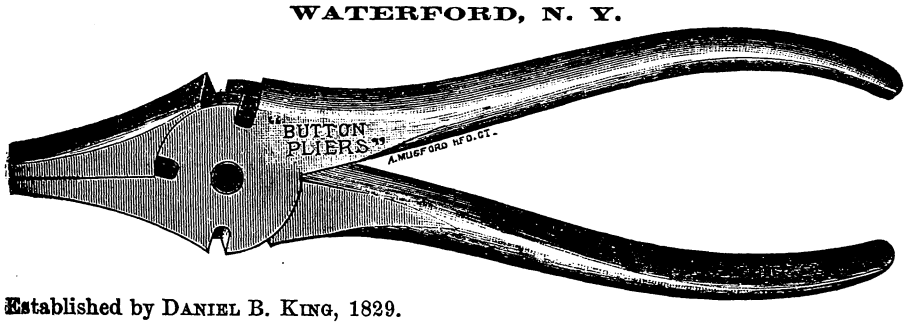
WATERFORD, N. Y.

Manufacturers of

BUTTON'S

Pat. Wire Cutter

AND PLIER COMBINED.



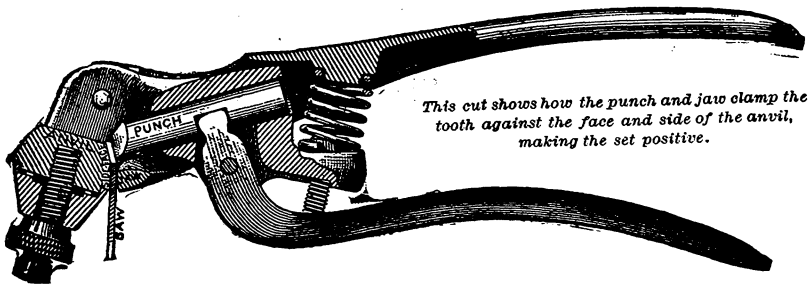
Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

Established by DANIEL B. KING, 1829.

THE TAINTOR POSITIVE SAW SET.



This cut shows how the punch and jaw clamp the tooth against the face and side of the anvil, making the set positive.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

BOSTON, Oct. 27, 1892.

TAINTOR MFG. Co., New York,

DEAR SIRS:—Have tried your Saw Set, and find it the *best* in *every particular* and have used a *great many* different kinds for *twenty years*.

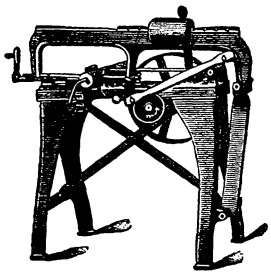
Yours, etc., F. W. SPEAKMAN, No. 75 Rutland St., Boston.

For Prices and Discounts, address

WIEBUSCH & HILGER, Ltd., Sole Agents,

84 and 86 Chambers Street, New York.

STOVER POWER HACK SAW.



Cuts off any size or Shape of Metal.

Up to 4½ Inches

No skill required to run it. When bar is cut off the machine automatically lifts the saw from the work and stops.

The pressure on the saw is **much greater on the forward stroke** than on the return.

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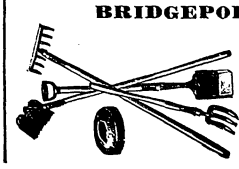
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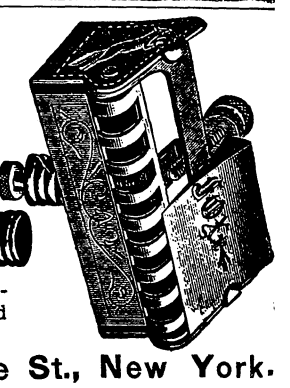
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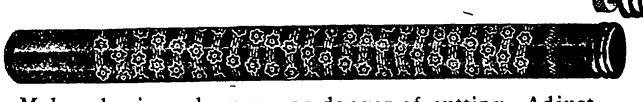
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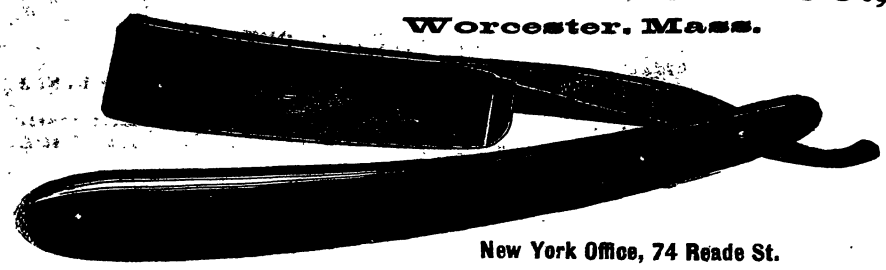
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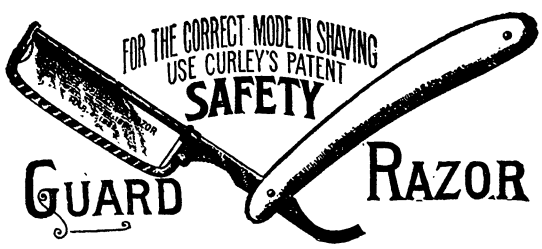


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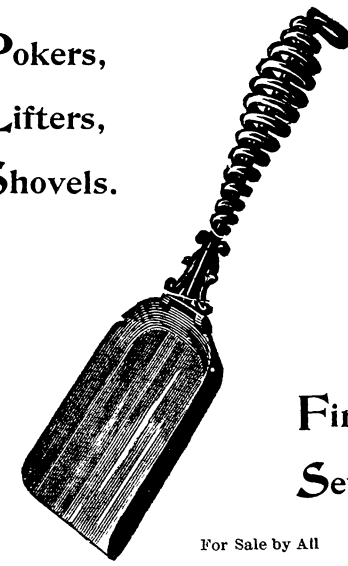
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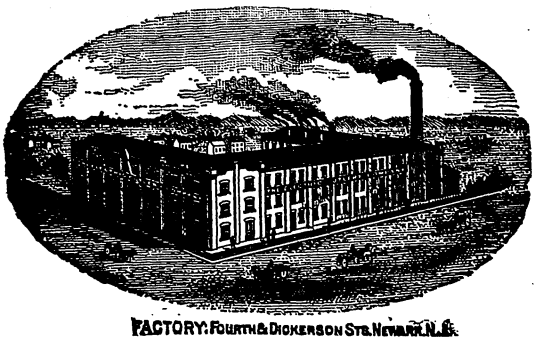
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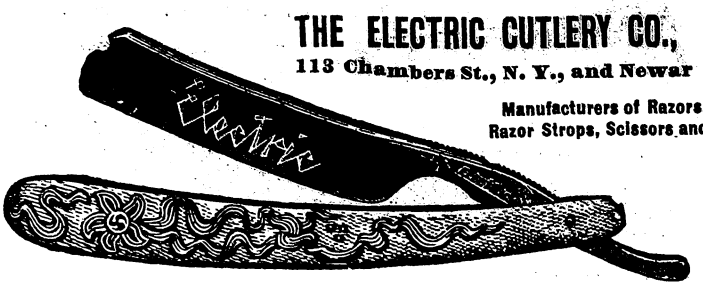
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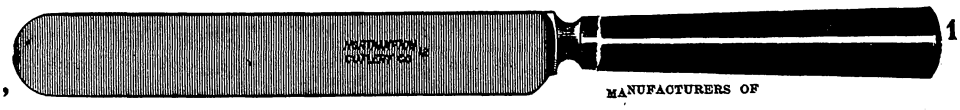


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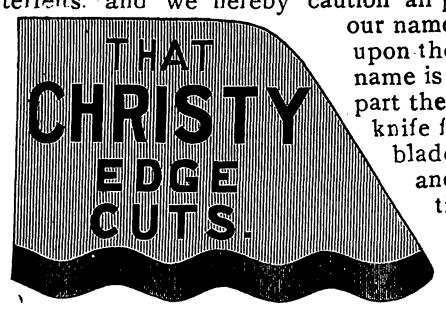
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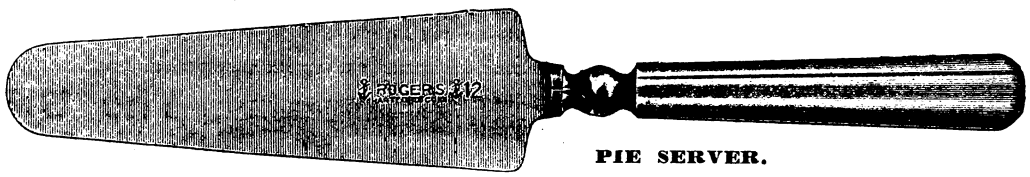
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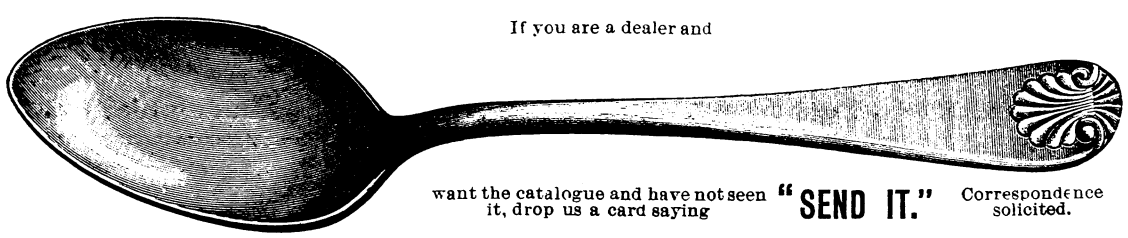
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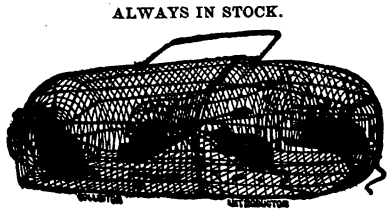
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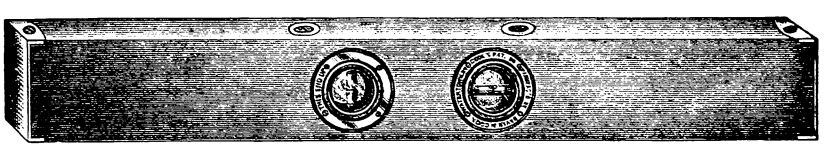
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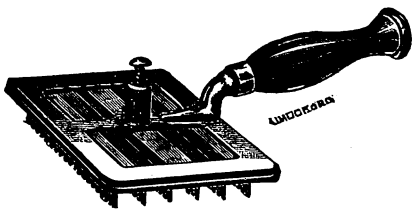
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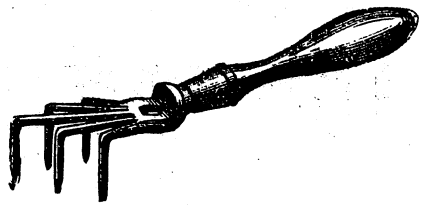
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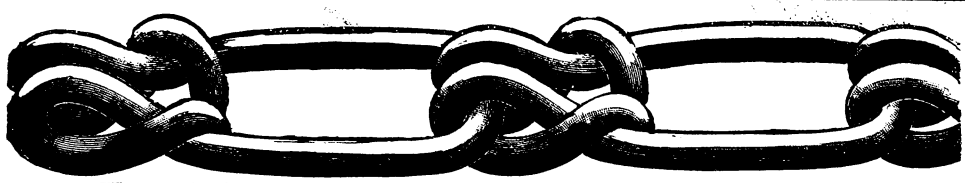
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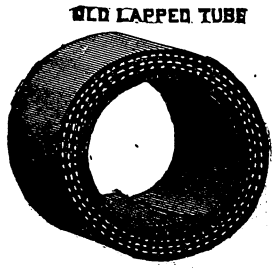
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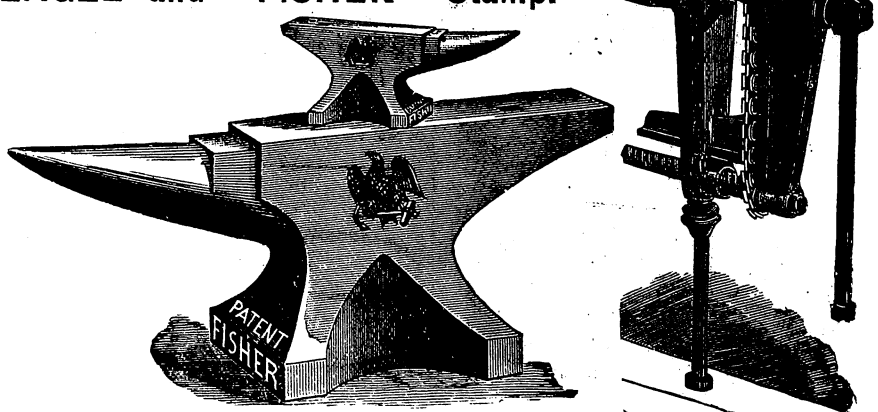
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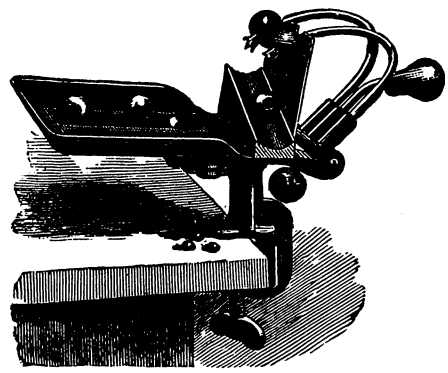


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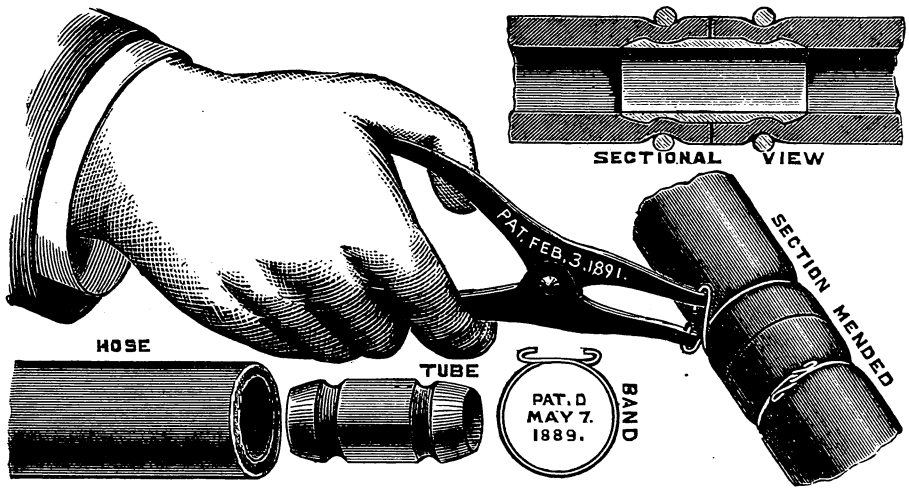
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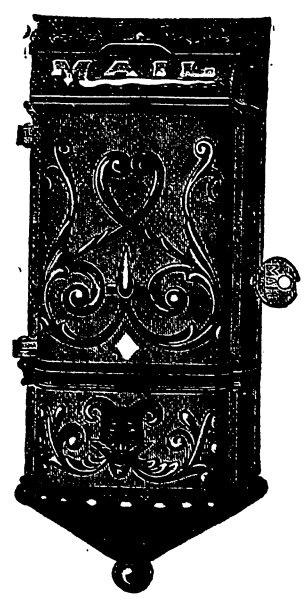
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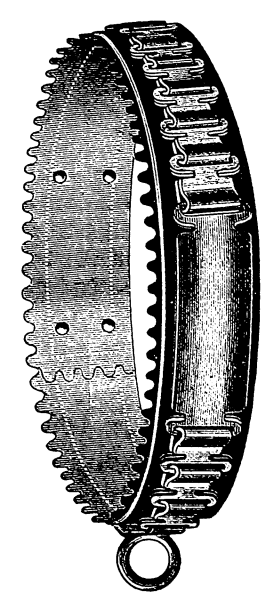
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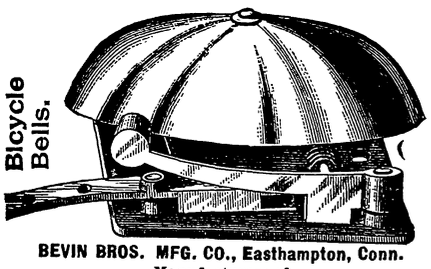
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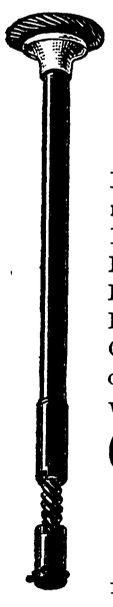
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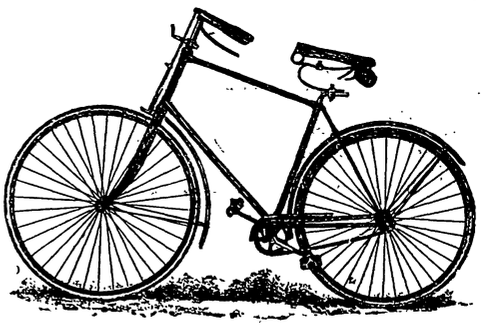
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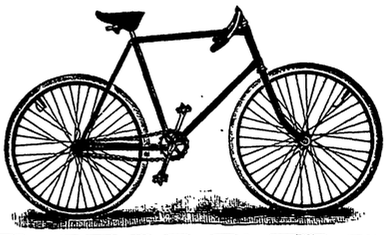
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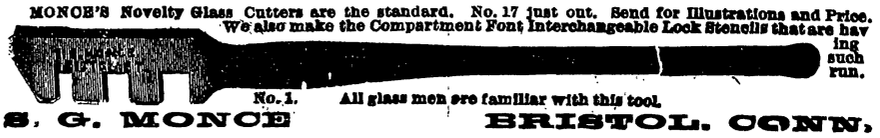


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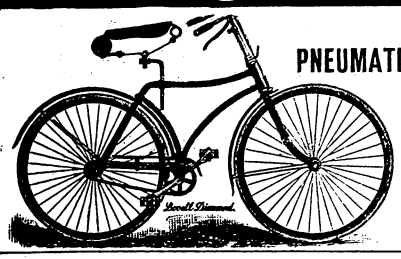


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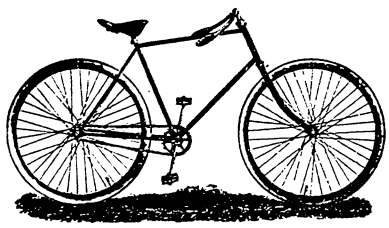
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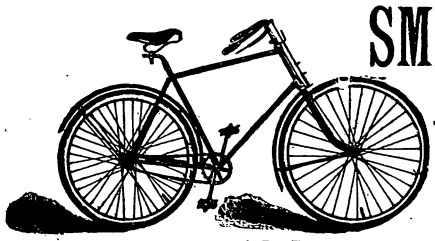


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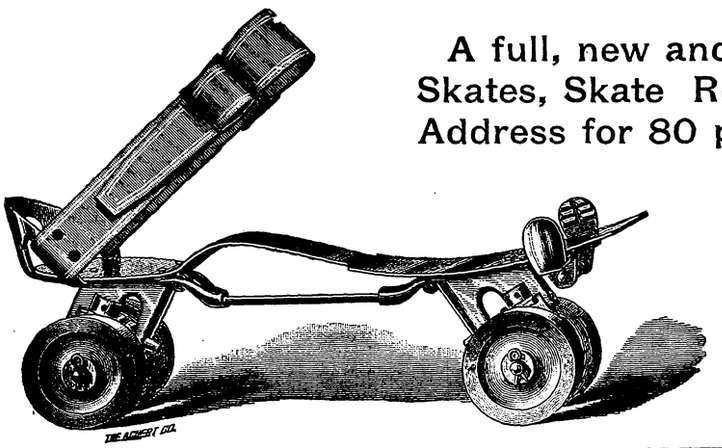
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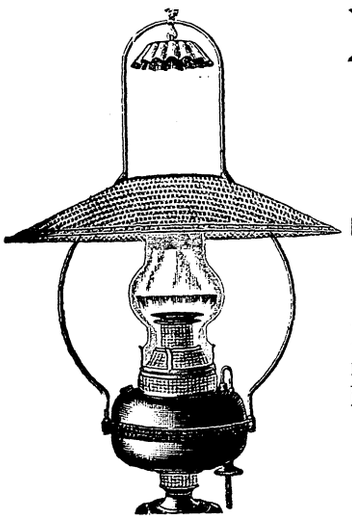


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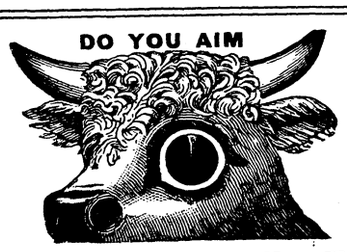
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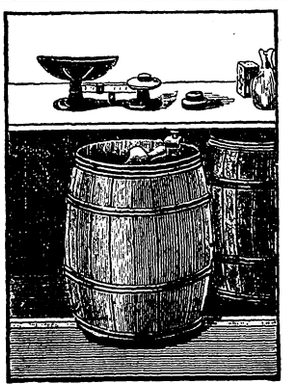
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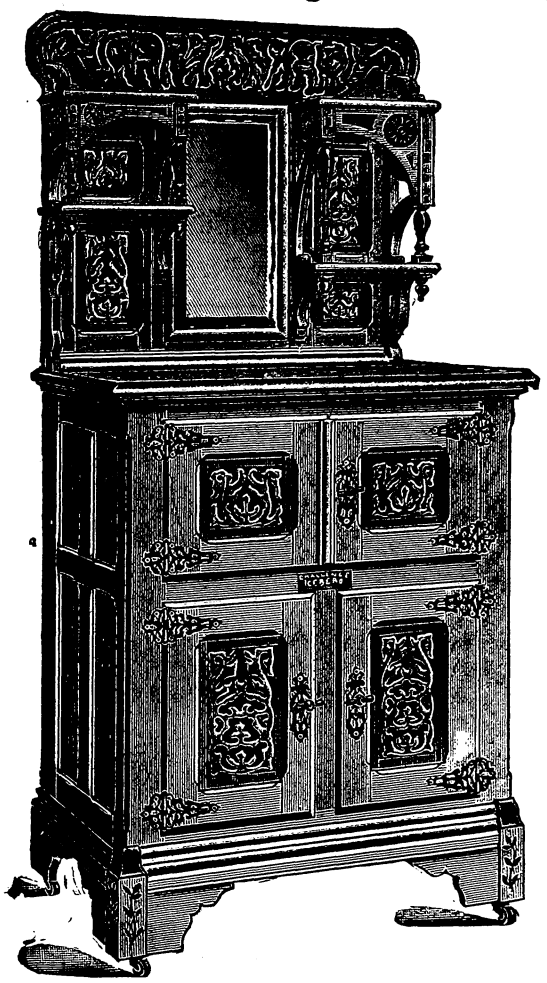
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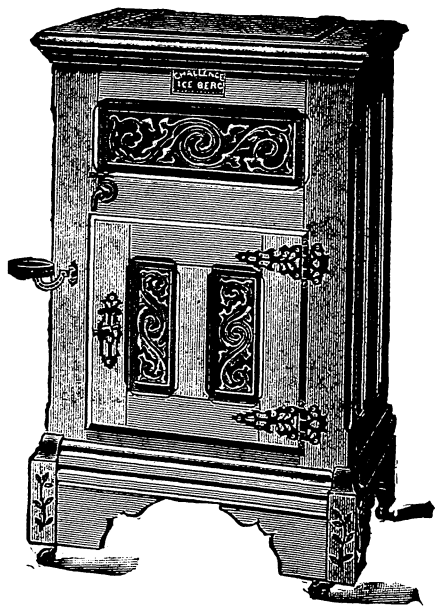
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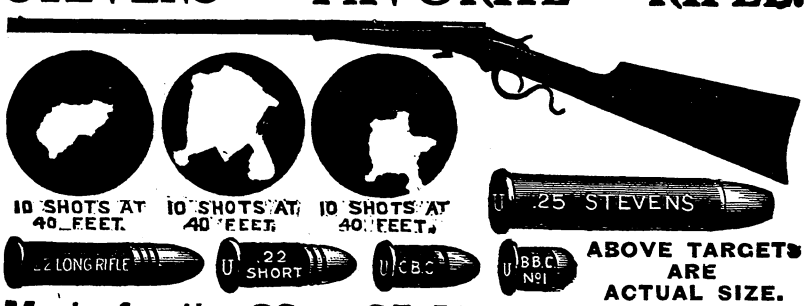
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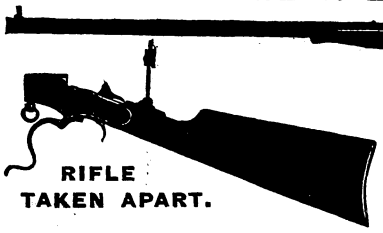
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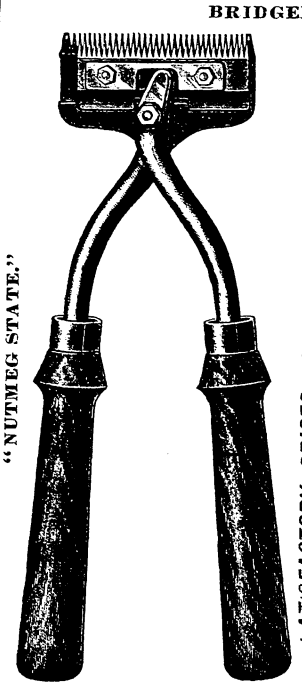
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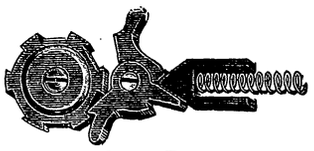
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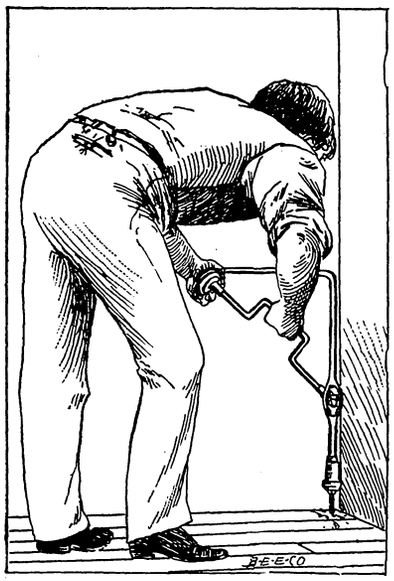
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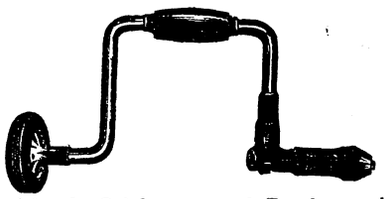
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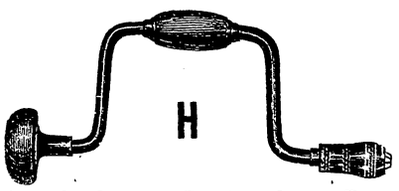
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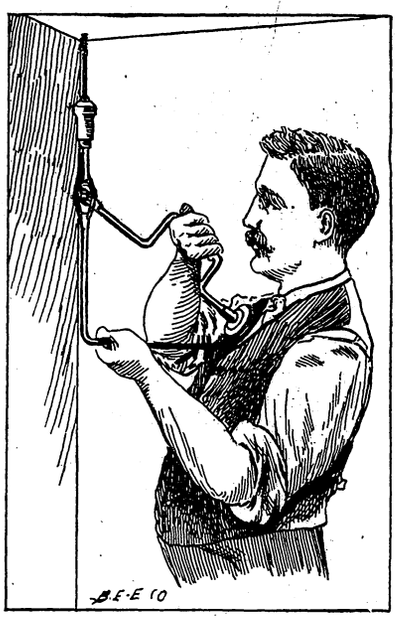




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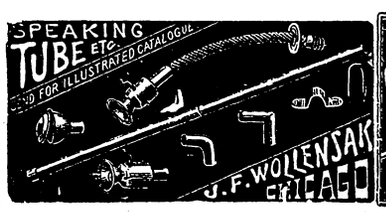
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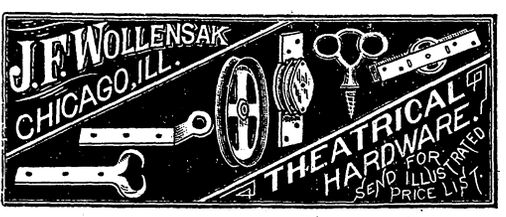
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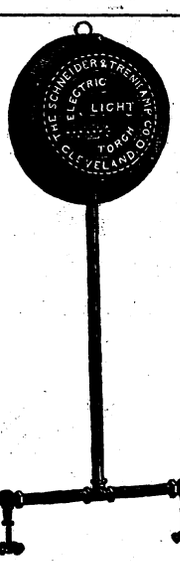
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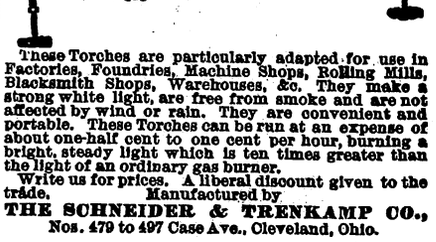
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CHICAGO. NEW YORK. BOSTON.

TO THE TRADE:—

When we announced, in December last, that our suit against The Haberman Manufacturing Company and J. E. Mosheim, their auctioneer, had been decided in our favor by his Honor Judge Coxe, The Haberman Manufacturing Company came out with numerous circulars in which they sought to blunt the edge of the decision by asserting that our success was far from complete; that they had taken their appeal, and that on the appeal they were sure to succeed. They took their appeal; they took it promptly; they engaged able counsel to assist those who originally had stood up for them, and they presented their case in the ablest possible manner to the United States Circuit Court of Appeals, now the highest tribunal for the decision of patent cases. The case was argued by our counsel, A v. Briesen and Joseph H. Choate, before Judges Wallace, Lacombe and Shipman, and by their **unanimous decision,** handed down to-day, **they hold that Judge Coxe's opinion must in all respects be affirmed;** that The Haberman Manufacturing Company had **violated our patented process,** and that The Haberman Manufacturing Company and Mosheim had **unlawfully sold our patented product,** and that the **injunction issued against both must stand.** It follows, that the accounting for the damages we suffered and the profits made by the infringers will now be prosecuted vigorously and to the end. **There is no further appeal from this decision.** It is, as we stated before, that of the highest tribunal for the determination of such matters, and therefore any question respecting the validity of our patent is **finally set at rest.**

We are naturally gratified over the decision, although this result was never doubted by us. We trust that the decision will be heeded by all concerned, and that no **coagulated, mottled, wavy** or **clouded ware, infringing on our patent** will find a purchaser in this country; for if any such ware should hereafter be sold, we shall hold the dealers responsible for their infringement, since manufacturers are not always able to pay the full measure of damages.

We have every reason to hope that this announcement of our final success will meet with the same hearty response as the first victory received at the hands of the Trade. We likewise feel that it will be regarded as a triumph of inventive genius and fair dealing over unfair competition. As stated in our circular of December 22d, 1892, those who voluntarily come forward and report the extent of their past infringement will receive the same courteous and lenient treatment at our hands that it has been our pleasure to accord to those who have availed themselves of the conditions of that circular. Those who fail to do so will be prosecuted, and made to pay the full measure of damages.

Yours truly,

LALANCE & GROSJEAN MANUFACTURING CO

19 CLIFF STREET, NEW YORK.
April 18, 1893.

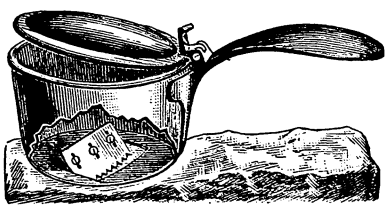
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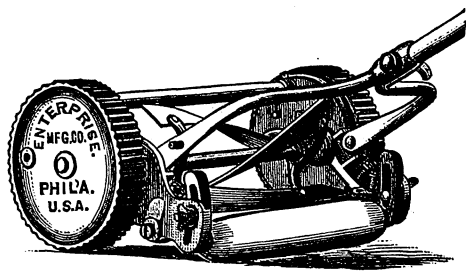
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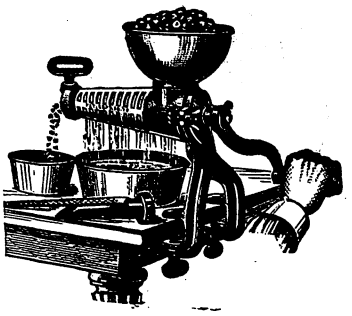
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7, 9, 11, 13 and 15 inches.
Simple in Construction.
Easily Adjusted.
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Highly Efficient.
Durable.

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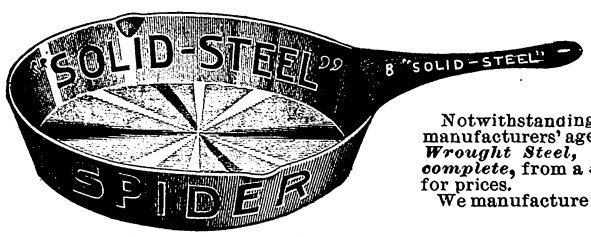
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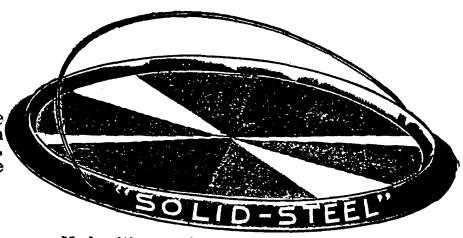
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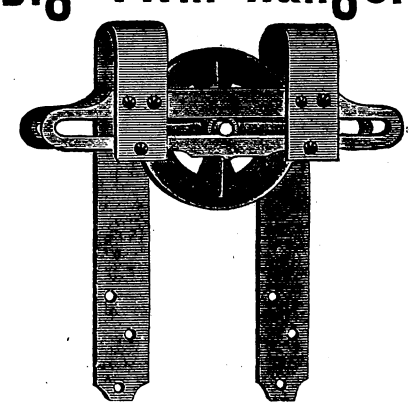
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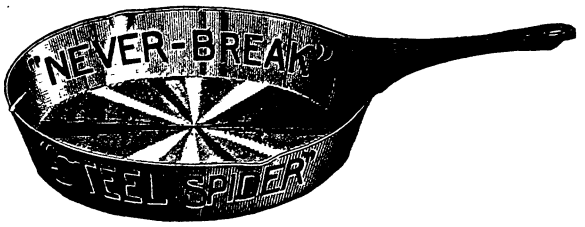
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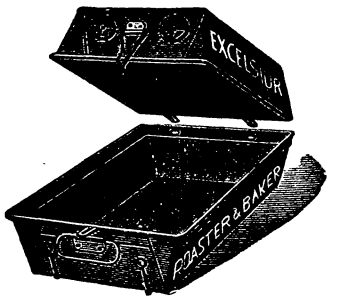


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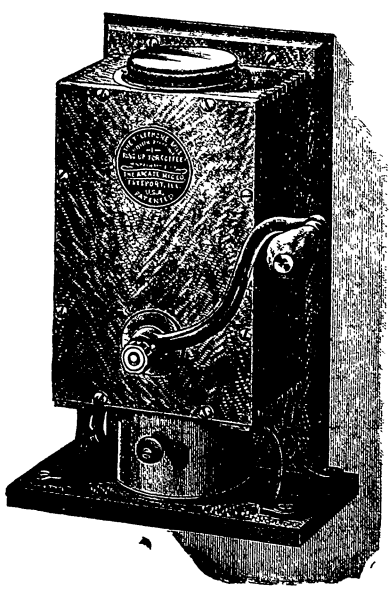
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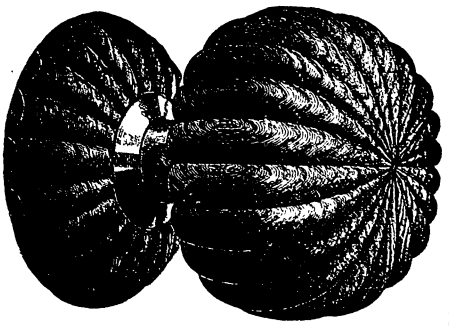
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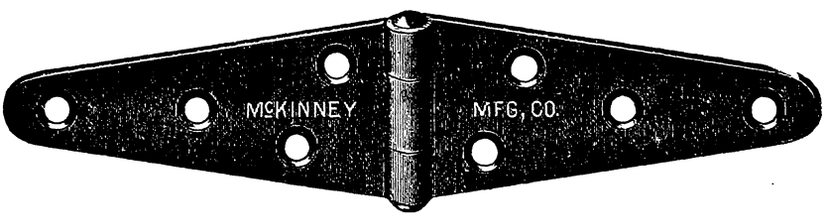
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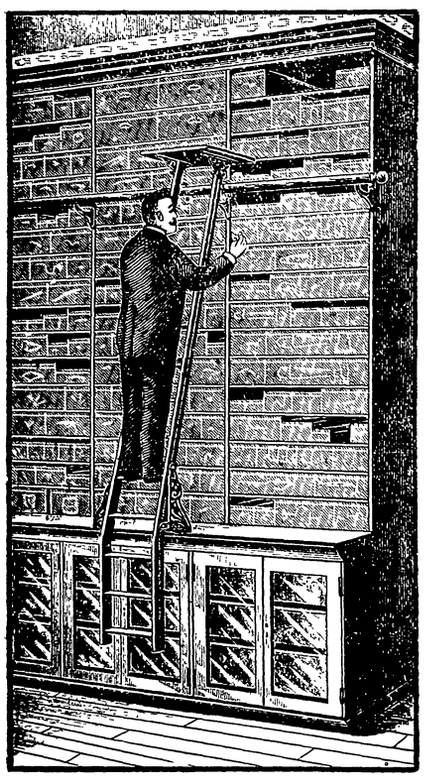
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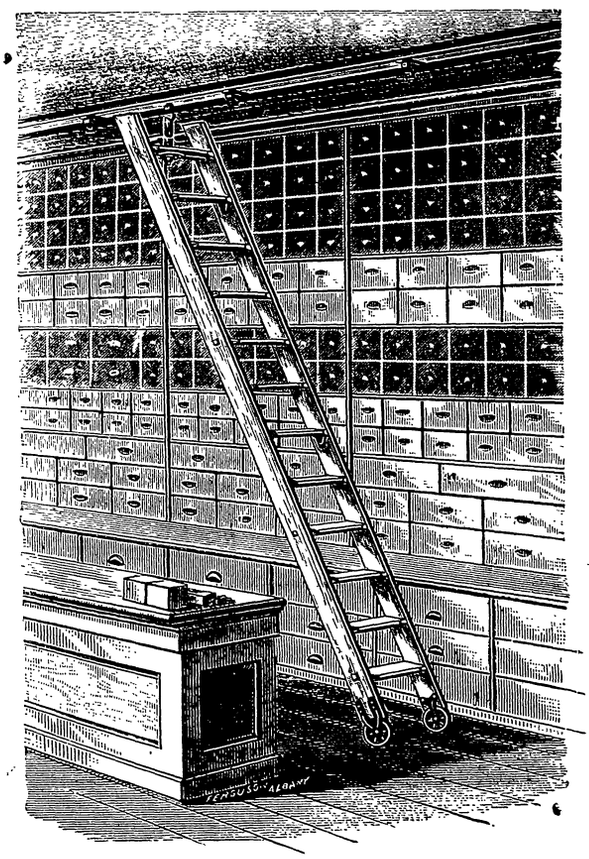
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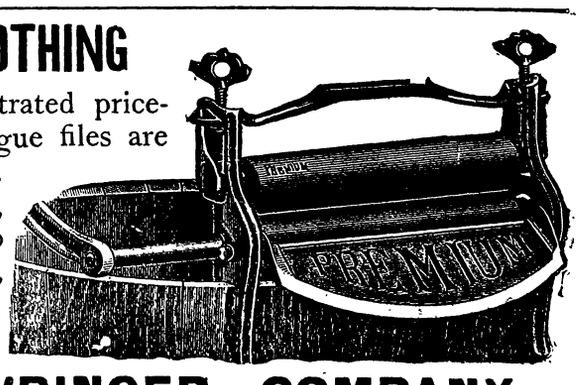
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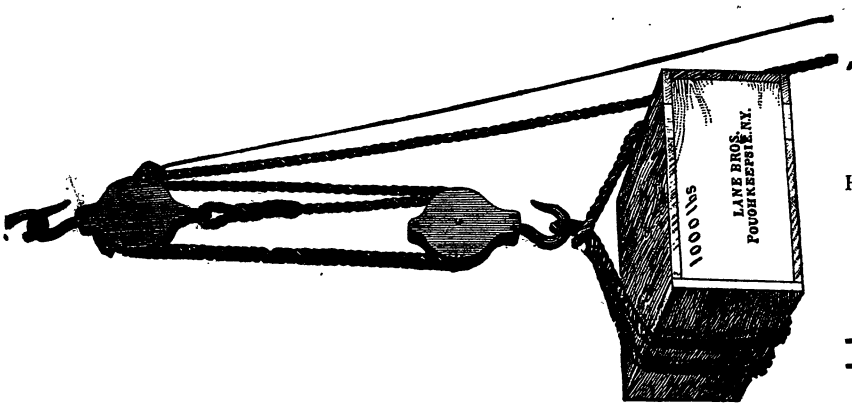
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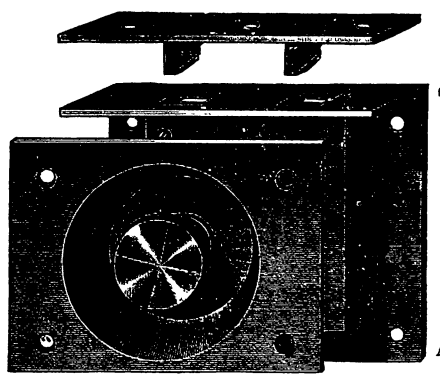
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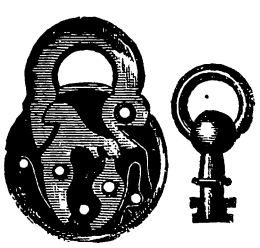
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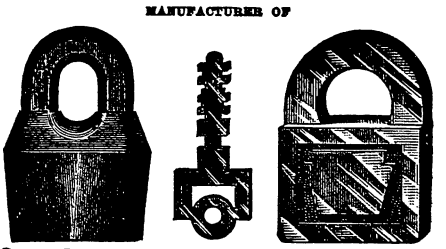
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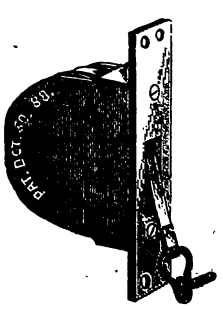
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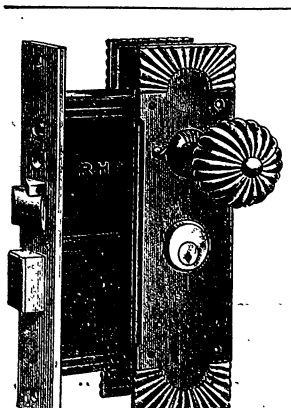
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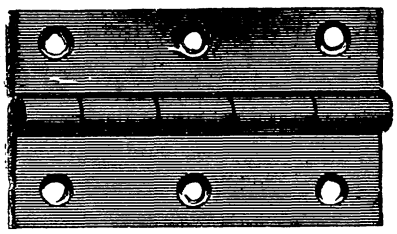
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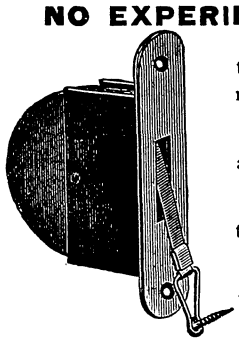
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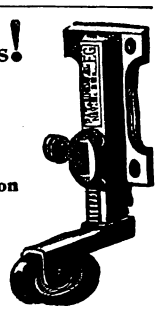
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Door Check Lock and Bumpers Holds door in any position



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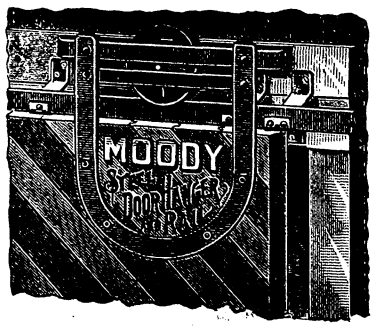
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Sash work as with weights. Prices: 65c., 80c. and $1.00 per set of four. Liberal discounts.

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Showing one-half set of hangers attached to door.

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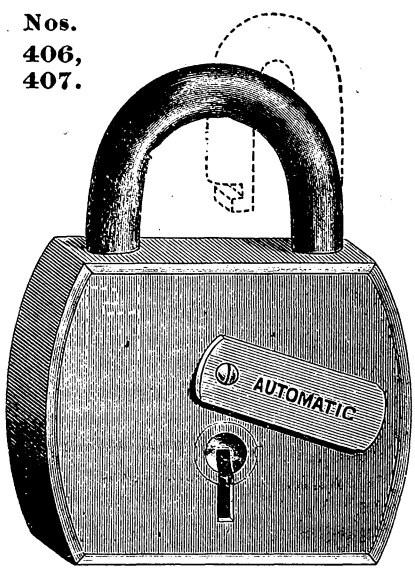


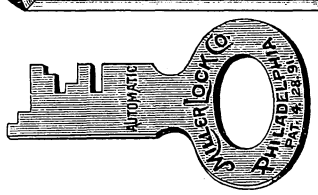
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No. 5, to run 6 feet, 3⅛ in. wheel,	$10.00
No. 6, to run 10 feet, 4⅛ in. wheel,	15.00
No. 7, to run 15 feet, 5⅛ in. wheel,	22.00
RAIL, per foot	6½ cents.

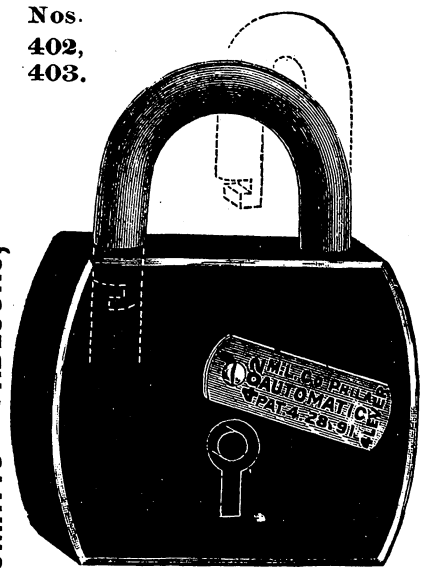
Nos. 406, 407.

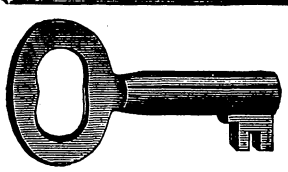




"AUTOMATIC" PADLOCKS, Two Styles.

Nos. 402, 403.





When made special, *to pass a sample key*, also when made with *keys alike to pass*, and as well when *more than* 50 *changes* are required in a set, the price per dozen locks is advanced 50 cents net.

Nos.	Keys.		Weight.	Per Dozen.
400,	1,	Brass Plated, Cycler's Lock,	1 oz.	$6 60
402,	2,	Steel, dark finish,	4½ "	6 67
403,	2,	Brass, bright "	4½ "	8 00
406,	2,	Steel, dark "	4½ "	7 20
407,	2,	Brass, bright "	4½ "	8 50

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MILLER LOCK CO., Lock Manufacturers, **PHILADELPHIA, PA.**

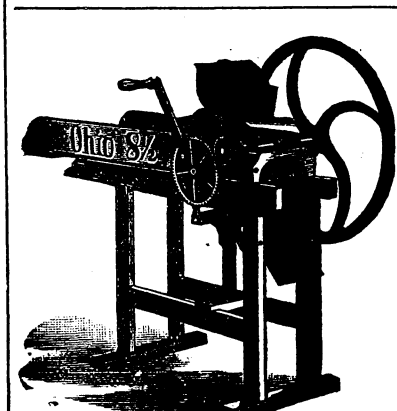
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Send for Catalogue, Samples, Prices.

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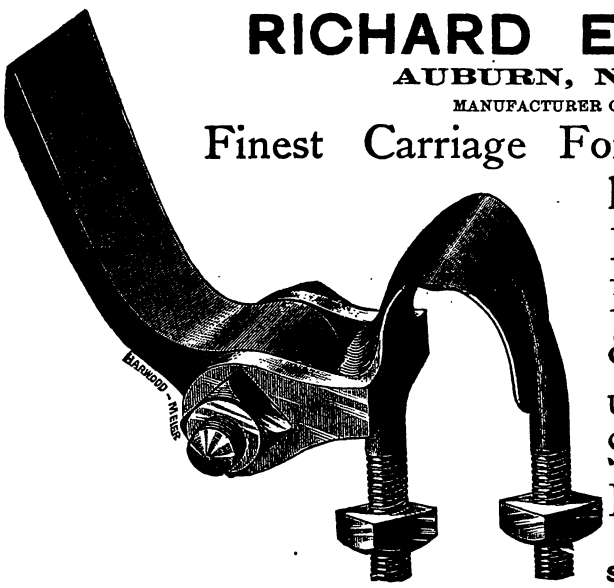


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A Comb that can be Retailed at 25 Cents.

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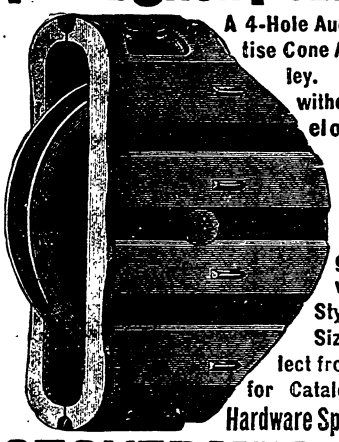
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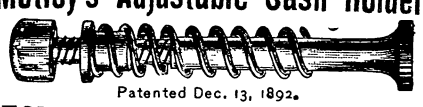


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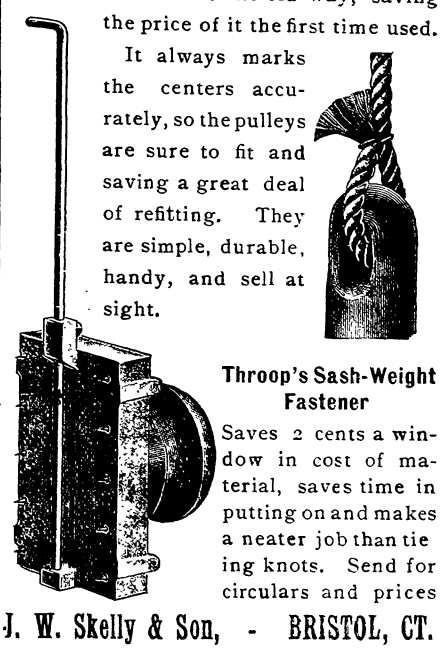
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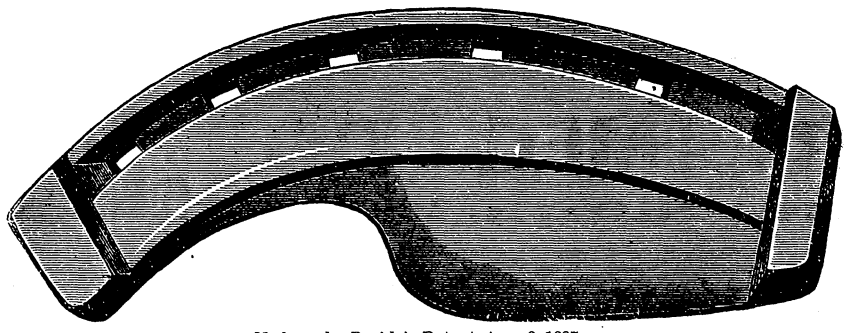
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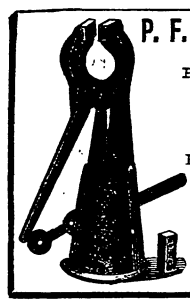
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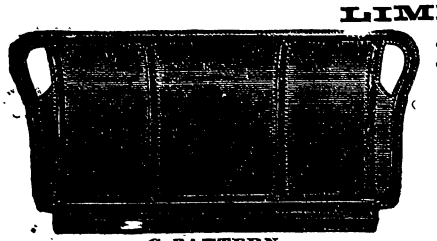
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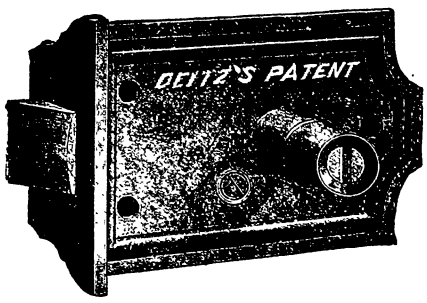
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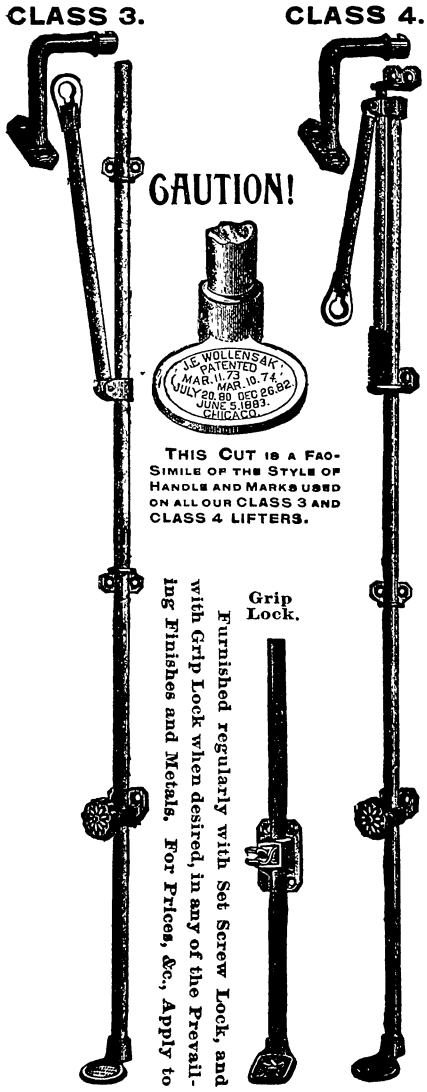
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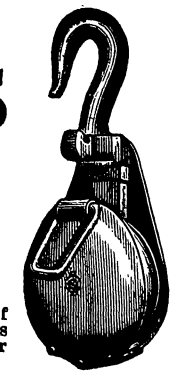
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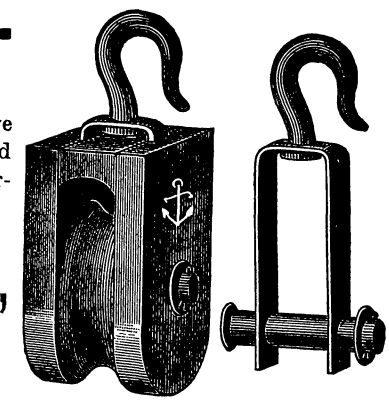
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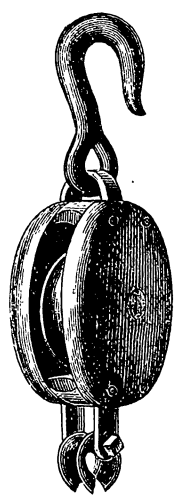
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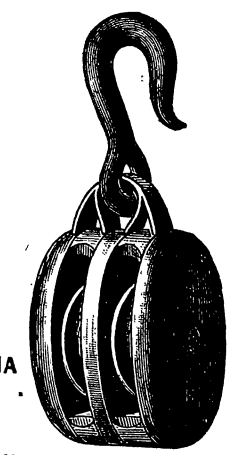
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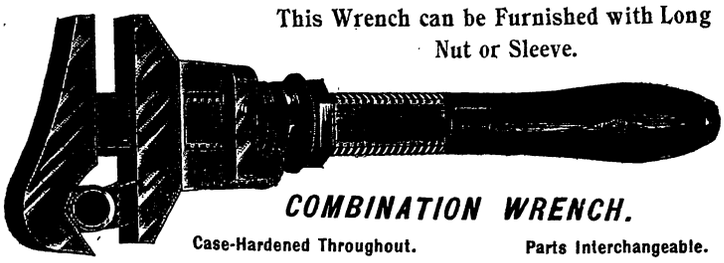
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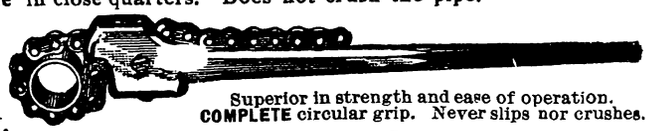
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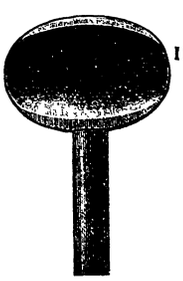


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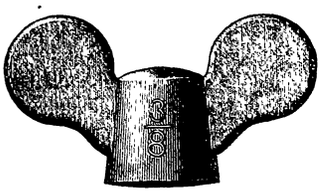
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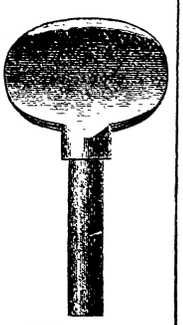
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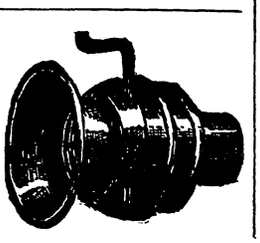
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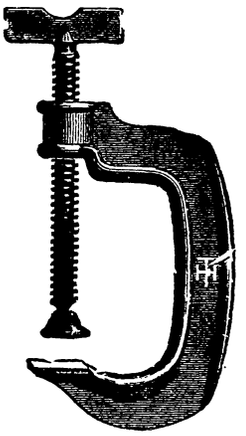
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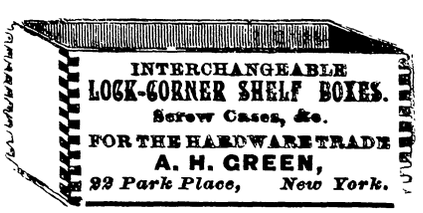


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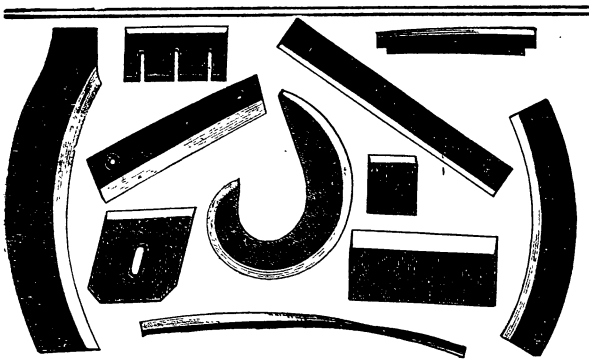


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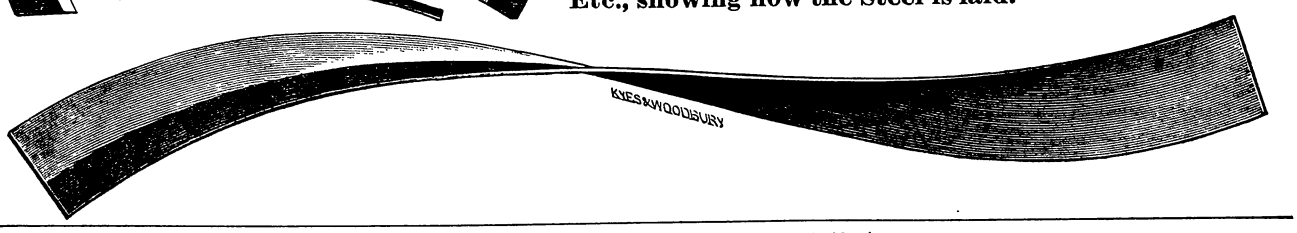
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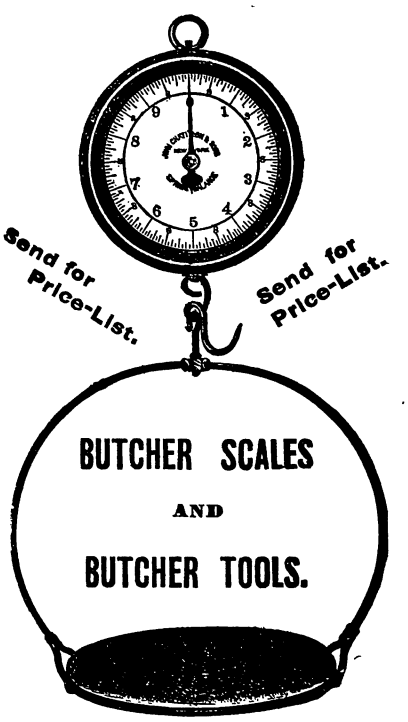
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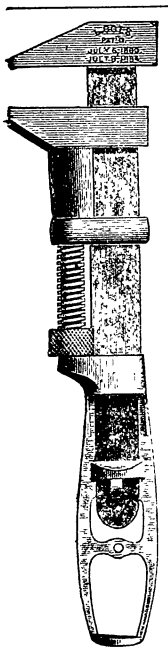
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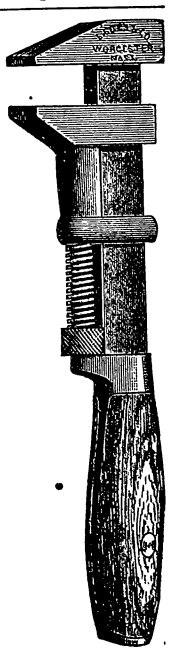
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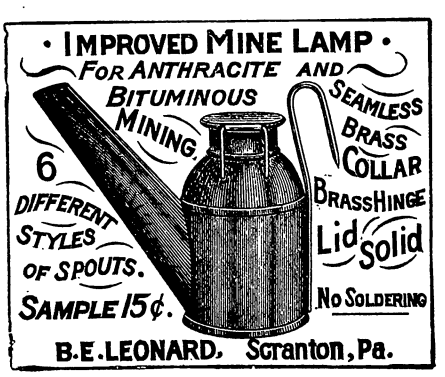
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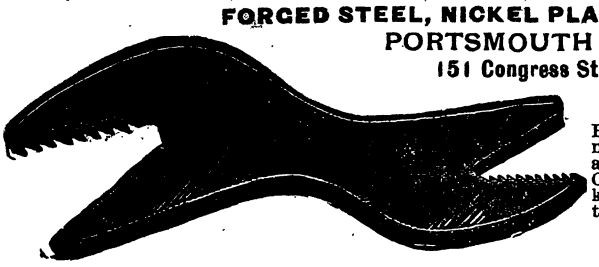
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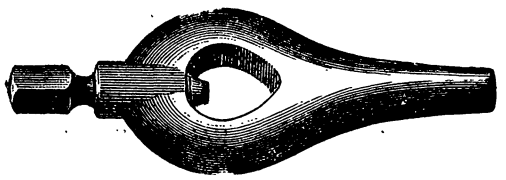
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4	1⅛	80	14	4	2 10
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6	1⅜	95	16	5	3 25
7	1½	95	17	5½	4 00
8	1¾	1 10	18	6	5 00
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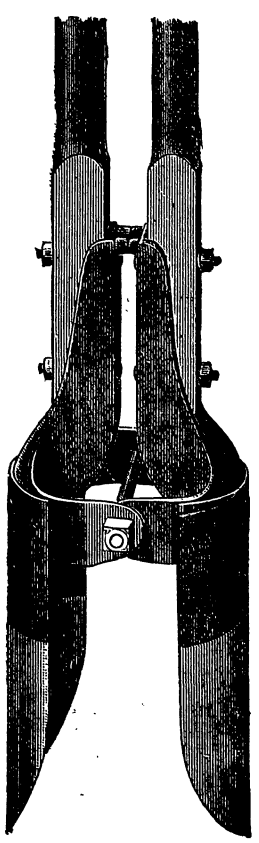
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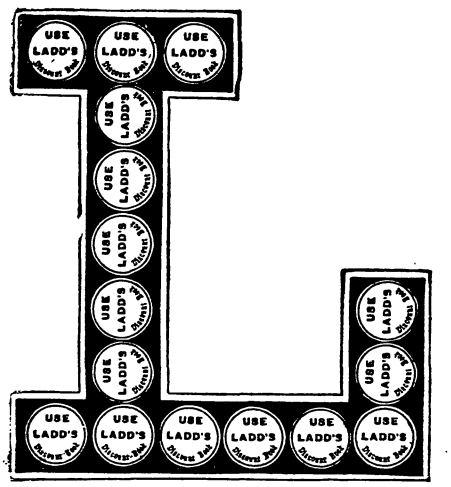
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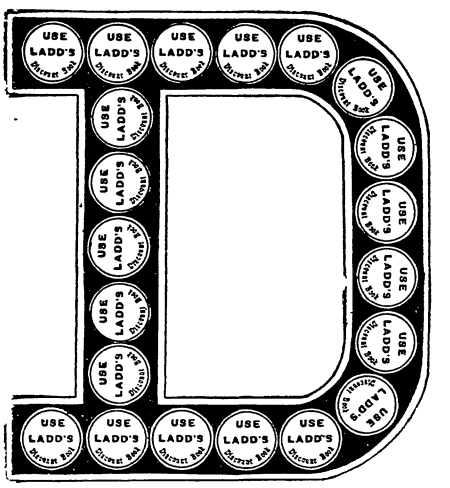
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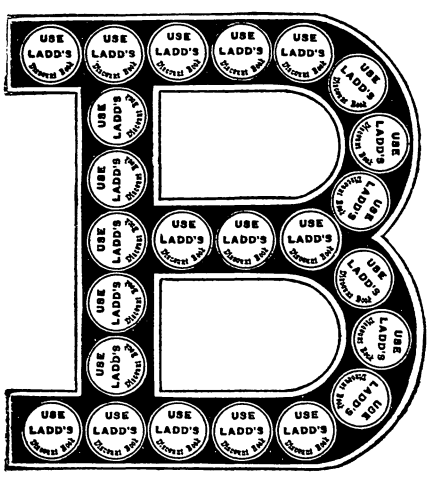
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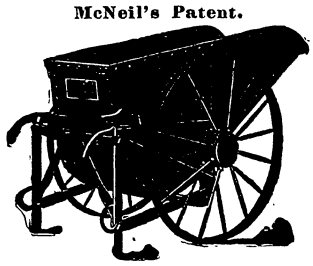
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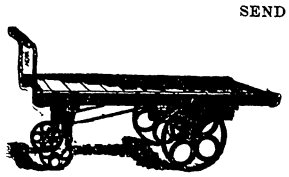
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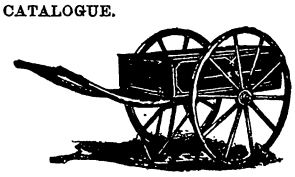
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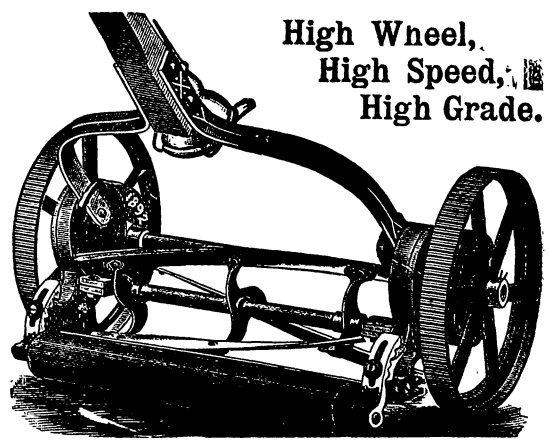
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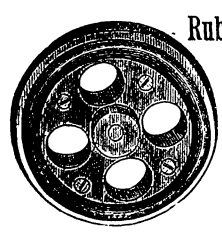
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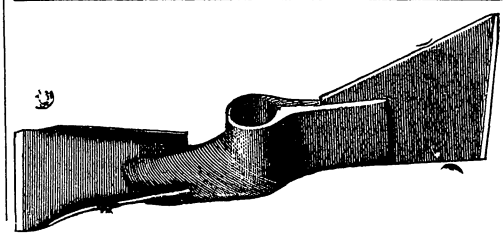
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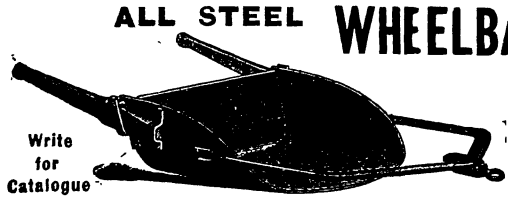


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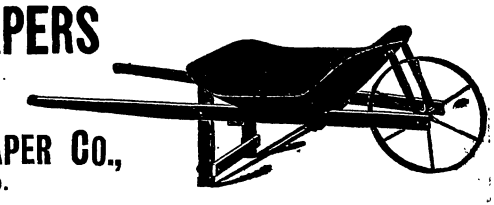
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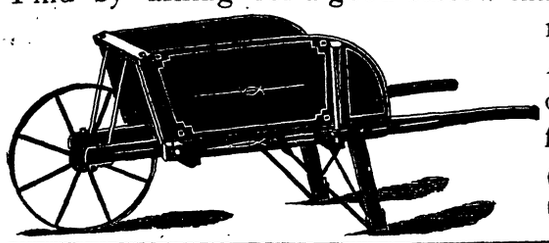
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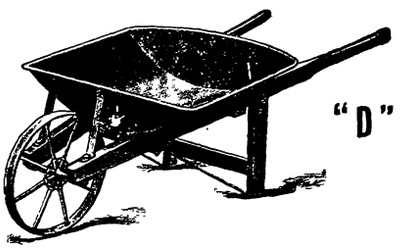


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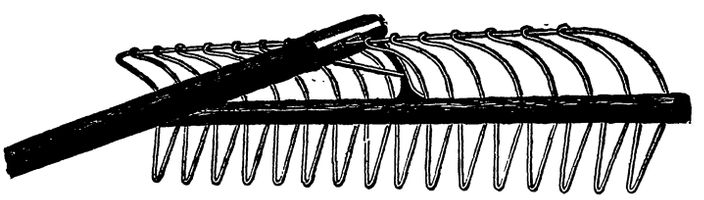


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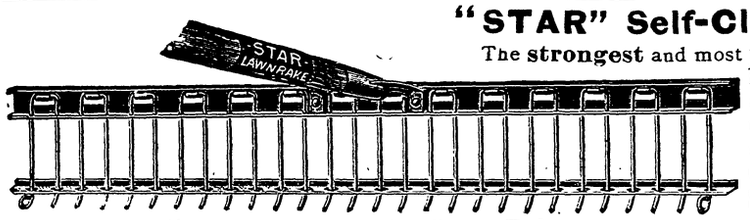
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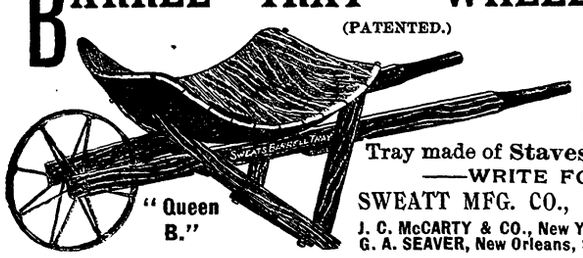


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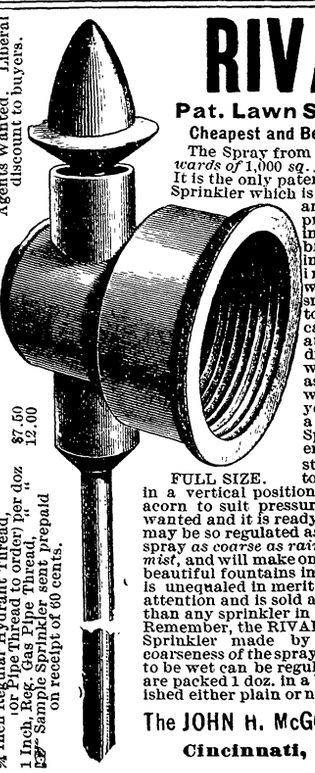
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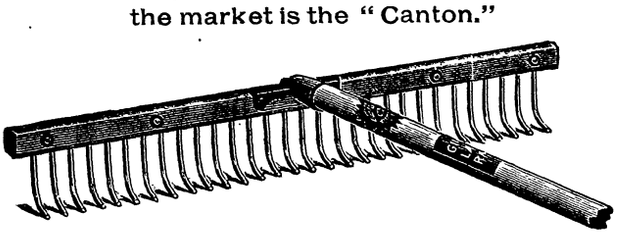
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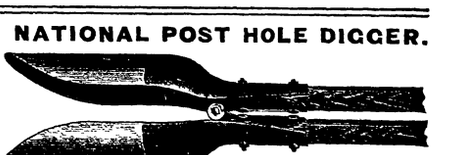
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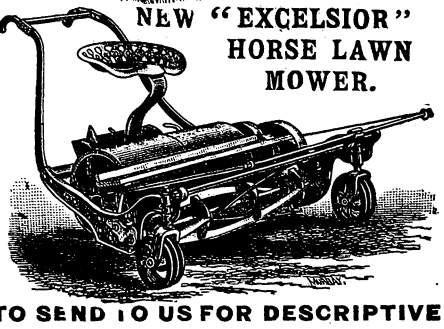
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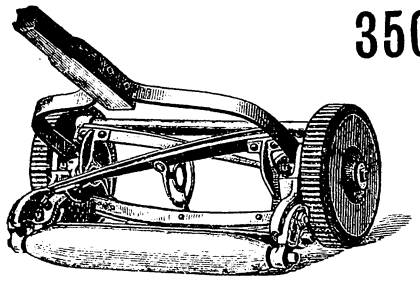


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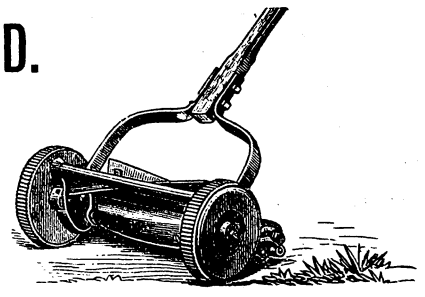


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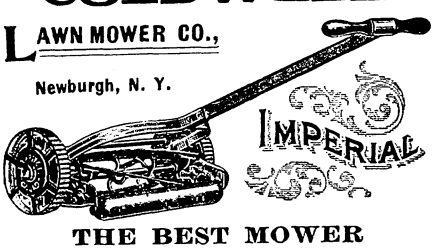
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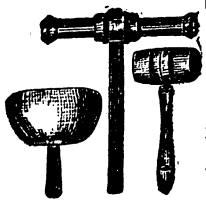
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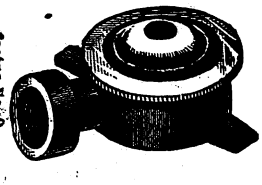


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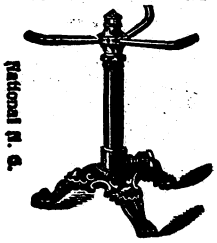
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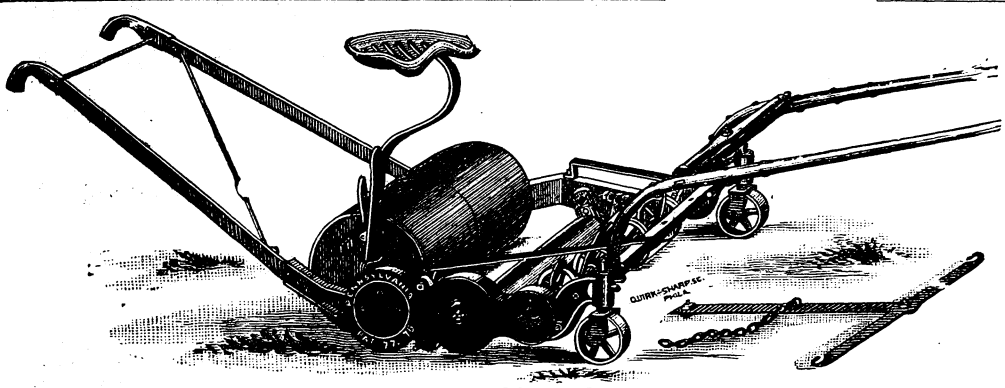
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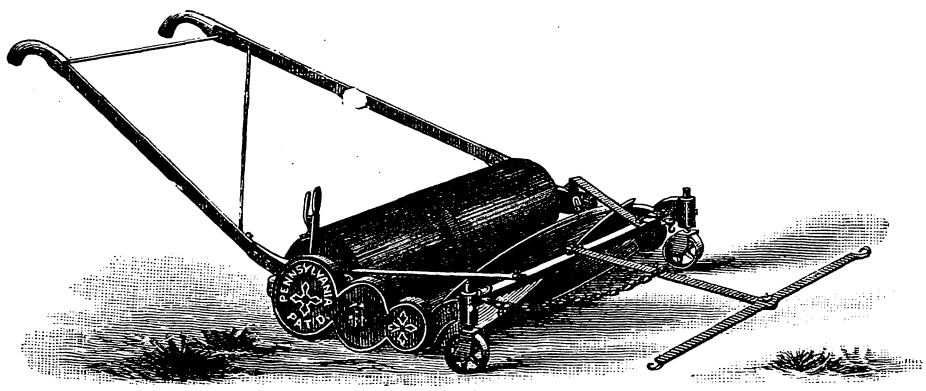
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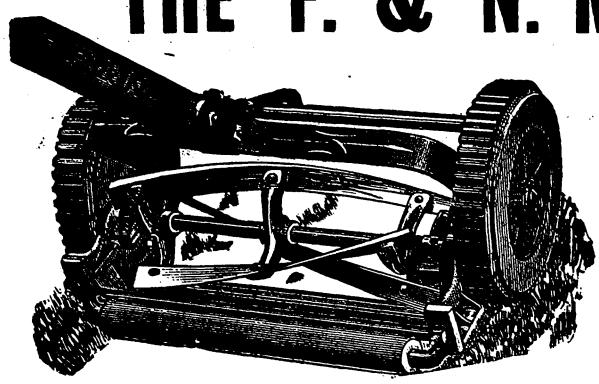
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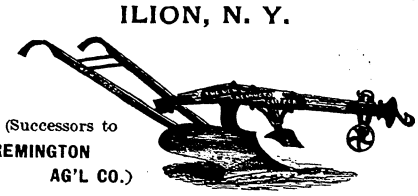
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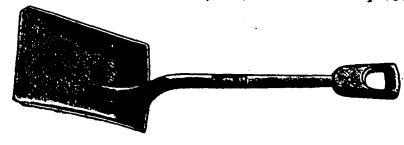
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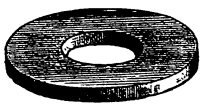
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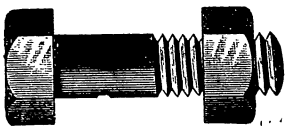
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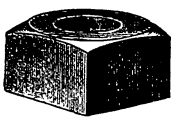


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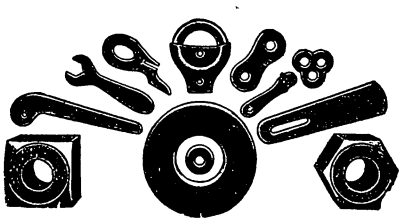
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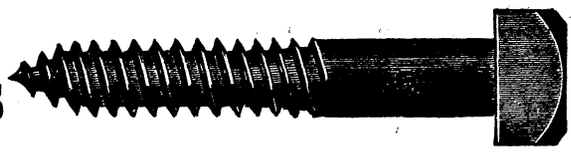
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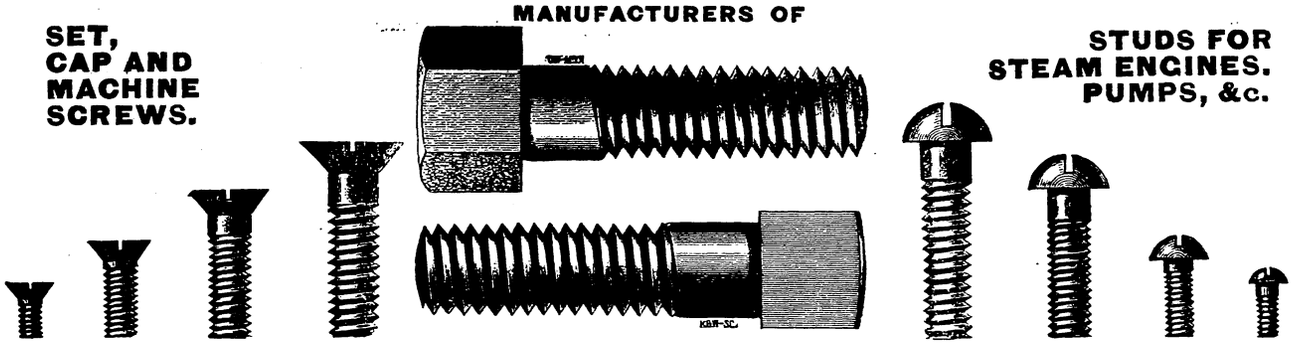
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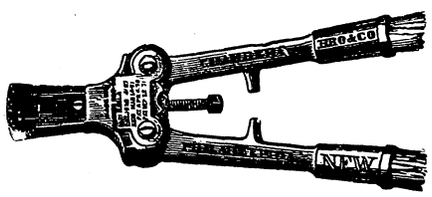
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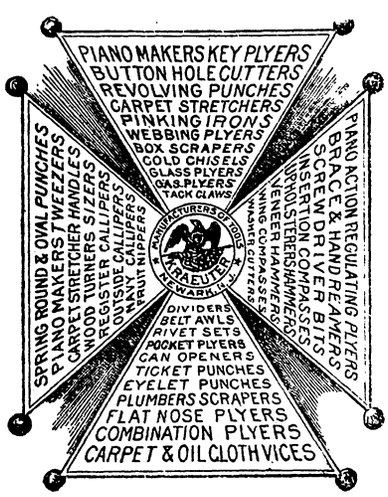
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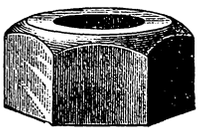
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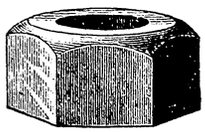
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Taylor Iron & Steel Co. High Bridge, N.J
Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
Trenton Mal. Iron Co., Trenton, N. J.
Union Mfg. Co., 103 Chambers St., N.Y.
West Coxsackie Iron Fdry. Coxsackie, N. Y.
Wetherill, Robt. & Co., Chester, Pa.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Conn
Link-Belt Engineering Co., Phila. a.
McKay, Jas. & Co., Pittsburgh, Pa.

Cherry Stoners.
Goodell Co., Antrim, N. H.

Chimneys.
Phila. Engineering Works., Phila., Pa.

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Horton, E. & Sons Co., Windsor Locks Conn.
Smith & Egge Mfg. Co., Bridgeport.
Skinner Chuck Co., New Britain, Conn
Union Mfg. Co., 103 Chambers, N. Y.
Whitlock, W. 132d St. & Park Ave., N.Y
Whiton, D. E., Mach. Co., New London, Conn.

Clamps.
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.

Clipping Machines.
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 26 Warren St.

Clock Springs, *Manufr's of*
Haley Mfg. Co. Concord, N. H.

Coal.
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills
Arcade Mfg. Co., E. Freeport, Ill.

Coke.
Barns, C. K. & Co., Philadelphia, Pa
Houston, C. E. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, Francis, Philadelphia, Pa.

Collections
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.
Brown Rolling & Conveying Machine, Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.

Copper.
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N.Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass and Copper Works, Rome, N. Y.
Wister, Francis, Philadelphia, Pa.

Coppersmith.
Emory, P. P. Mfg. Co., Springfield, Mass.

Cordage.
Elizabethport Cordage Co., 46 South, Samson Cordage Works, Boston, Mass.
Travers Bros. Co., 107 Duane St., N. Y

Cork Screws.
Detroit Cork Screw Co., Detroit, Mich.
Williamson, C. T. Wire Novelty Co., Newark, N. J.

Corrugated Furnaces.
Continental Iron Wks, Brooklyn, N.Y.

Corrugated Iron.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Miller, Jas. A. & Bro., Chicago, Ill.
Moseley Iron Bridge & Roof Co., 5 Dey, N. Y.

Counting Machines.
Osborn, G. Edw. & Co., New Haven, Ct

Coupling.
Almond, T. R., Brooklyn, N. Y.

Coverings, Boiler and Pipe.
Johns, H. W. Mfg. Co., 87 Maiden Lane.

Cranes.
Allentown Rolling Mills, Allentown, Pa
Detroit Foundry Equipment Co., Detroit, Mich.
Maris & Beekley, Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, P
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford, Conn.

Cupolas, Hot-Blast.
Byram & Co., Detroit, Mich.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. & Equipment Co., Detroit, Mich.

Curry Combs.
Kohler, F. E. & Co., Canton, O.
Noyes, B. B. & Co., Greenfield, Mass.
Spring Currey Comb Co., So. Bend, Ind

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Gurney, Fred B., 116 Chambers St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Christy Knife Co., Fremont, O.
Curley, J. & Bro., 6 Warren St., N. Y.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Landers, Frary & Clark, New Britain, Conn.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.

Cutting-off Tools.
A. M. Vending Mch. Co. 29 Murray, N.Y

Designer, Metal Work.
Arnold, F. H., New Britain, Conn.

Dies.
Wilson, J. Fred, Worcester, Mass.

Dipper Handles.
Home Novelty Mfg. Co., St. Louis, Mo.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn
Kelley & Woolworth, Niagara Falls, N. Y.

Door Checks.
Utility Door Check Co., Chicago, Ill.

Door Knobs.
Bardsley, J., 149 & 151 Baxter St., N. Y

Drilling Machines.
Brady Mfg. Co., Brooklyn, N. Y.
Buffalo Forge Co., Buffalo, N. Y.
Burnham, Geo. Co., Worcester, Mass
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. L., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Illinois Iron and Bolt Co., Carpentersville, Ill.
Norton & Jones Machine Tool Works, Plainville, Conn.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa
Sibley & Ware, So. Bend Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Smith Friction Drill & Tool Co., Boston, Mass.

Drop Forgings.
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. C. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y.
Herbrand Co., Fremont, O.
Merrill Bros., 26 First, Brooklyn, E. D.
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Drop Presses.
Bliss, E. W. & Co., Brooklyn, N. Y
Crosby, G. A. & Co., Chicago, Ill.
Eaton, Geo. H. & Co., Boston, Mass.
Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dynamite.
New York Powder Co., 62 Liberty St., N. Y.

Dynamos.
C. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 to 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Butcher, W. & S., 135 Duane St., N. Y.
Buffalo Edge Tool Wks., Buffalo, N. Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., New York.
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Eddy Electric Mfg. Co., Windsor, Conn.

Electric Elevators.
Smith Hill Co., Quincy, Ill.

Electric Welding.
Thomson Electric Welding Co., Boston, Mass.

Electro-Platers.
Boardman, L. & Son, East Haddam, Ct.

Elevators, *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Moline Elevator Co., Moline, Ill.
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E., 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Chester, Mass
Hamden Corundum Wheel Co., Springfield. Mass
Hampden Emery and Corundum Co. Chester, Mass.
Michigan Emery Wheel Co., Detroit Mich.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.

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Norton Emery Wheel Co., Worcester Mass
Springfield Emery Wheel Mfg. Co Bridgeport, Conn.
Waltham Emery Wheel Co., Waltham, Mass.

Enamels.
Nubian Iron Enamel Co., Cragin Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Brady Mfg. Co. Brooklyn. N. Y.
Carten, Henry J., Pittsburgh, Pa
Christie, W. Wallace, Paterson, N. J.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Wilkie, Bothwell & Co., Ltd., Pittsburgh, Pa.
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Cleveland & Hardwick, Erie, Pa.
Harrisburg Fdy. & Machine Works Harrisburg, Pa.
Norwalk Iron Works Co., So Norwalk, Conn.
Phœnix Iron Wks. Co., Meadville, Pa.
Shipman Engine Co., Boston, Mass
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. & Son, Brooklyn, N.Y.
Church, Isaac, Toledo, O

Faucets, Self-Measuring
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Berryman, Jas., Philadelphia, Pa
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Phila., Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Beaver Falls, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire Works Co., Milwaukee.

Files, *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
Butcher, W. & S., 135 Duane St., N. Y.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick, *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B. & Sons, foot E. Houston, St
Maurer, H. & Son, 420 E. 23d, N. Y.
Renovo Fire Brick and Clay Co., Phila.,
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.
Enterprise Mfg. Co., Akron, O.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T. St. Louis, Mo.

Fly Fans.
Matthai, Ingram & Co., Baltimore, Md

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Forges, Portable, &c.
Bradley & Co., Syracuse, N. Y.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foos Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
Chicago Fdy. Supply Co., Chicago, Ill.
MacKellar Foundry Facing & Supply Co., Quincy, Ill.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.
Whitehead Bros. Co., 517 W. 15th St.,

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Chicago Fdy. Supply Co., Chicago, Ill.
Collau, Victor, Detroit, Mich.
MacKellar Fdy. Facing & Supply Co., Quincy, Ill.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cinn., O.
Whitehead Bros. Co., 517 W. 15th St

Friction Clutches.
Moore & White Co., Philadelphia, Pa.

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Fuel Burners.
Collins, W. S., 45 Drexel Bldg., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Garden Tools.
Noyes, B. B. & Co., Greenfield, Mass.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast & Maule, Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
T. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston Mass.
New Process Raw Hide Co., Syracuse, N. Y
Poole, Robt. & Son Co., Baltimore, Md
Union Fdy. & Mch. Co., Pittsburgh, Pa

Glass Boards.
Canton Saw Co., Canton, O.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery.
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.
Huron Grindstone Co., Port Austin, Mich.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich

Halter Chains.
Kelle & Woolworth, Niagara Falls, N. Y.

Handles.
New Process Raw Hide Co., Syracuse N. Y
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N.Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
Hussey, E. J. & Co., 80 John St., N. Y.
McCoy, Jos. F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Hart, H. C Mfg. Co., Detroit, Mich.
Henn, A. S. & Co., New Haven, Conn
Home Novelty Mfg. Co., St. Louis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Welland, Chas., 113 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.
Wire Goods Co., Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis

Hollow-Ware.
Bronson Supply Co., Cleveland, Ohio.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Holloware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
National Horse Nail Co., Vergennes, Vt,

Horse Shoes, *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phœnix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Standard Horse Shoe Co., Boston, Mass.
The Burden Iron Co., Troy, N. Y.

Hose.
Cleveland Rubber Co., Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hose Menders.
Hudson, C. E. & Co., Leominster, Mass.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
Shepard Hdw. Co., Buffalo, N. Y.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Jenkins Bros., New York

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Coun.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Mann, E. R. & Co., Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pickards, Brown & Co., Chicago, Ill.
Pierson & Co., 24-27 West, N. Y.
Richards, D. W. & Co., 88 Manginst. N. Y.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott, Jere & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet, *Manufacturers of.*
Ætna Iron & Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders.
Davies, Chas. & Co., Williamsport, Pa.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co, Chelsea, Mich.

Lamps.
Standard Lighting Co, Cleveland, O.

Lanterns.
Dietz, R. E. & Co., 60 Laight St., N. Y.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Bradford Mill Co., Cincinnati, Ohio.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Sebastian Lathe Co., Cincinnati, O.
Sebastian, May & Co., Sidney, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing, Wire
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mattocks.
Railway Speed Recorder Co., Kent, O.

Lawn Mowers.
Bingham, W. Co., Cleveland, O.
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., New burg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Graham, Passmore & Co., Phila., Pa.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.

Lawn Swings.
Davies, Chas. & Co., Williamsport, Pa.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letter Boxes.
Merriam Mfg. Co., Durham, Conn.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass

Locks & Knobs, *Manufacturers of.*
Deitz, A. E., 97 Chambers, N. Y.
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Sargent & Co., 37 Chambers St., N. Y
Smith & Egge Mfg Co., Bridgeport.
Yale & Towne Mfg. Co., Stamford.

Lubricators.
Wadham's Oil & Grease Co., Milwaukee Wis.

Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Becker, Jno. Mfg. Co., Fitchburg, Mass
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Bradford Mill Co., Cincinnati, Ohio
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence, R. I.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cruikshank, D. B., Providence, R. I.
Davis, W. P., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co, Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Ingersoll Milling Machine Co., Rockford, Ill.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pedrick & Ayer, Philadelphia, Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa.
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.
Woodruff Mfg. Co. Hartford, Conn.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass.
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery.*

Machine Work.
Angus, C. H., Albany, N. Y.

Machinists.
Best, Fox & Co., Pittsburgh, Pa.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.

Machinists' Tools and Supplies.
Brown & Sharpe Mfg. Co., Providence.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y.

Manufacturing Sites.
Illinois Central R. R. Co., Chicago, Ill
Kokomo Enterprise Co., Kokomo, Ind.

Measuring Tapes.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Drawing.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton, J. Blodgett, Phila.

Metal Saws.
Ehrhardt, Gastave & Sons, Pittsburg
Q & C Co., Chicago, Ill.

Milling Machines.
Brown & Sharpe, Providence, R. I.
Cin. Milling Mch. Co., Cincinnati, Ohio.
Ingersoll Milling Machine Co., Rockford, Ill.
Pedrick & Ayer, Phila. Pa.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.
Leonard, T. F., Scranton, Pa.

Mining Engineers.
Leofred, A., Quebec, Canada.

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Mining Screens.
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y.

Model Work.
Hurley Bros. Hartford, Conn.

Molding Sand.
Chicago Foundry Supply Co., Chicago, Ill.
Obermayer, S. Co., Cincinnati, O.
Paxson, J. W. & Co., Phila.
Whitehead Bros. Co., 517 W. 15th St. N. Y.

Motors, Water and Electric.
C. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
Thomson, Houston Motor Co., Boston, Mass.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington, N.
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks, Wheeling, W. Va.
Stebbins, C. J., 103 Reade, N. Y.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y.

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct.

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R.I.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergn, J. H. & Son, Reading, Pa.
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Packing.
Billington, Jas. H. & Co., Phila., Pa.
Morris, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Detroit Graphite Mfg. Co., Detroit, Mich.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O.

Patent Solicitors.
Ashley, J. A., Washington, D. C.
Fitzgerald, S. C., Washington, D. C.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Paine & Ladd, Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gauge & Valve Co., Boston, Mass.
Haik & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B & Co., Philadelphia, Pa
Mann, Edwin R., Philadelphia, Pa.
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast & Maule, Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila., Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate Bending Rolls.
Schneekloth, H. A., 530 W. 28th St., N.Y

Plate, Iron and Steel, *Mfrs of*
Ætna Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Angus, C. H. Albany, N. Y.
Shepard Hdw. Co., Buffalo, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Plumbago.
Chicago Fdy. Supply Co., Chicago, Ill

Plows.
Ross, A. M. & Co., Ilion, N. Y.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
St., New York.
Graham, John H. & Co., 113 Chambers
Kohler, F. E. & Co. Canton, O.
Wister, L & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.
Stover Novelty Wks, Freeport, Ill.

Power Hammers.
Bradley & Co., Syracuse, N. Y.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Hackney Hammer Co., Cleveland, O.
Jenkins & Lingle, Bellefonte, Pa.

Power Punches and Shears.
Eaton, Geo. H. & Co., Boston, Mass.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Eaton, Geo. H. & Co., Boston, Mass.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass,

Pumping Machinery.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump Wks, Easthampton Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.
St. Joseph Pump Co., St. Joseph, Mo.

Punches and Shears, Hand and Power.
Cleveland Hdw. Co., Cleveland, O.
New Doty Mfg. Co., Janesville, Wis.
Stark Mch. & Tool Co., Buffalo, N. Y.

Punching and Shearing Presses.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Schneekloth, H. A., 530 W. 28th St., N.Y
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos, Punch & Shear Co., Cincinnati, Ohio.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Hirth, L. K., Chicago, Ill.
Perry, W. H. & Co., Providence, R. I.
Richards, J. H. & Co., Pittsburgh, Pa.

Railway Supplies.
Scully Steel & Iron Co., Chicago, Ill.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Butcher, W. & S., 135 Duane St., N. Y.
Curley, J. & Bro., 6 Warren St., N. Y.
Electric Cutlery Co., 113 Chambers, N. Y
Schmitz, E. Lothar, 92 Reade St., N. Y.
J. R. Torrey Razor Co., Worcester, Mass

Refrigerators.
Challenge Corn Planter Co., Grand Rapids, Mich.

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N. Y.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Roasters & Bakers.
Matthai, Ingram & Co., Baltimore, Md.

Rock Drills.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Rand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery.
Birmingham Iron Fdry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning Fdry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Bogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Chicago Foundry Co., Chicago, Ill
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Johnson Foundry Co., Johnstown, Pa
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope.
Travers Bros Co., 107 Duane St., N. Y.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N.Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sad Irons.
Universal Sad Iron Co., Milwaukee, Wis

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y
Hugunin, R. B., W. F. Mfg. Co. Hartford, Conn.
Pullman Sash Balance Co., Rochester, N. Y.
Stewart & Baker, Rochester, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.

Sash Holders.
Motley, Peter, Philadelphia, Pa.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Pulley Marker.
Skelly J. W. & Son, Bristol, Conn.

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Sash Weight Fasteners.
Skelly, J. W. & Son, Bristol, Conn.

Saws, *Makers of.*
Atkins, E. C. & Co., Indianapolis, Ind.
Disston, Henry & Sons, Phila., Pa.
Jennings, C. E. & Co., 97 Chambers, N.Y.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Kohler, F. E. & Co., Canton, Ohio.
Taintor Mfg. Co., 84-86 Chambers, N.Y.

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y.

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Door and Window
Queen Anne Screen Co., Burlington, Vt.

Screen Wire Holders.
Hamilton-Rankin Hdw. Co., Arkansas City, Kan.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Alford & Berkele Co., 75 Chambers St. N. Y.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Chantrell Tool Co., Reading, Pa.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.
Huron Grindstone Co., Port Austin, Mich.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna Iron & Steel Co., Bridgeport, O.
Allentown Rolling Mill, Phila.
Belleville Steel Co., St. Louis, Mo.
Illinois Steel Co., Chicago, Ill.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna Iron and Steel Co., Bridgeport, Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Moorehead-McCleane Co., Pittsburgh, Pierson & Co., 24-29 West St., N. Y.
Reily, John W., Fort Hunter P. O., Pa.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch, A. B. & Co., Peoria, Ill.

Shovels, Spades and Scoops.
Ross, A. M. & Co., Ilion, N. Y.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Skylights.
Plenty Horticultural & Skylight Wks. 145 Liberty St., N. Y.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Speaking Tubes.
Ostrander, W. R. & Co., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Am. Spiral Spring Co., Pittsburg Pa.
Cary, Alanson, 240-242 W. 29th St., N.Y
Dunbar Bros., Bristol, Conn.
Haley Mfg. Co., Concord, N. H.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred., 166 W. 27th St., N.Y
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester, N. Y.
Shepard Hdw. Co., Buffalo, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Spring Keys and Cotters.
Jencks Mfg. Co., Pawtucket, R. I.
Whitman & Barnes Mfg. Co., Syracuse N. Y.

Sprinklers.
Smith, Oliver A., Clarkston, Mich.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York

Stamping Works.
Avery Stamping Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges
Ashcroft Mfg Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.

Steam Heating.
Webster Warren & Co., Phila., Pa.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa.

Steel Balls.
Grant Anti-Friction Ball Co., Fitchburg, Mass.

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogstad, W., 61 Fulton, N. Y.

Steel Importers.
Abbott, Jere & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 88 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna Iron & Steel Co., Bridgeport, O
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Buffalo Steel Foundry, Buffalo, N. Y.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Illinois Steel Co., Chicago, Ill.

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Jessop, Wm. & Sons, Sheffield, Eng land, or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 33 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pennsylvania Steel Co.. Steelton, Pa.
Pierson & Co., 24-27 West, N. Y.
Pottsville Iron and Steel Co., Potte ville, Pa.
Reily, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pitts burgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Illinois Steel Co., Chicago, Ill.
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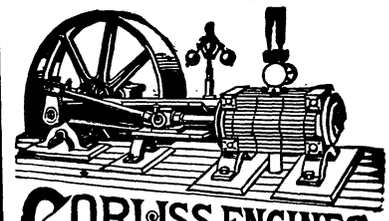
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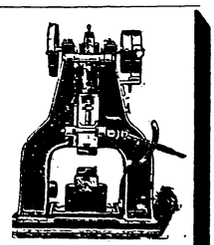
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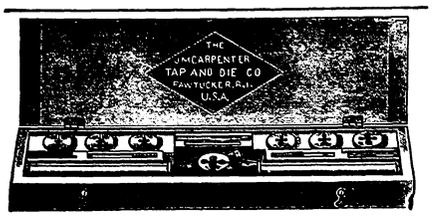
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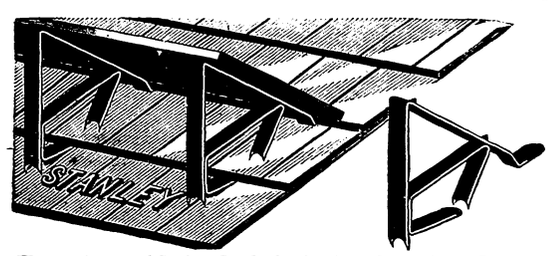


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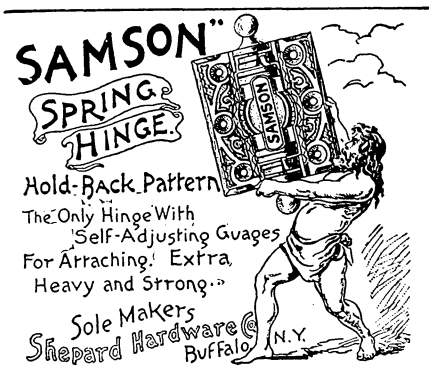
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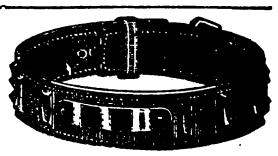
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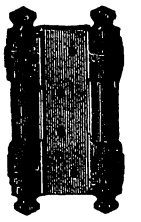
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THE IRON AGE

THURSDAY, APRIL 27, 1893.

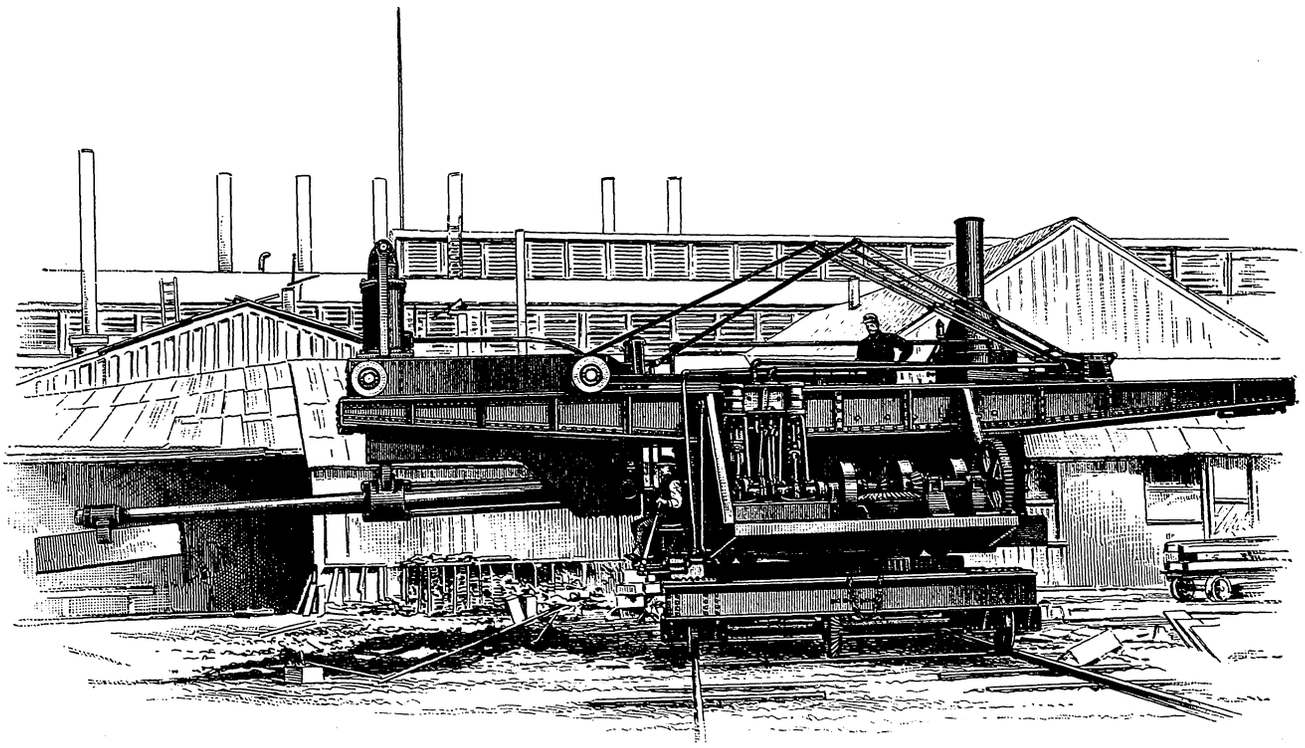
Trade and Mineral Resources of Bolivia.

In an interview with Hon. Thomas H. Anderson, late minister of the United States to Bolivia, published by the Bureau of the American Republics, is a considerable amount of interesting information respecting that Republic, especially in regard to her trade requirements, mining industries and prospects for the future. Ex-Minister Anderson states that there is a great demand in Bolivia for mining machinery, carpenter's tools, galvanized iron roofing and siding, hardware and kindred goods. These articles have hitherto been supplied by the English and German firms who have controlled the bulk of Bolivia's foreign trade, but Mr. Anderson believes that a ready field exists for the introduction of American manufactures in the Republic, provided the trade requirements of the country are studied and properly met. But the trade must be drummed up there as at home, and branch houses should be established in the leading Bolivian cities carrying judiciously selected stocks of American goods under the management of Spanish speaking Americans. Better and more speedy means of intercommunication are, however, greatly needed. The mineral resources of Bolivia are well known. She is the richest country in this respect on the South American continent, and the mining industries are being slowly but steadily developed. Gold, silver, tin, copper, bismuth, &c., are represented in the list of her products. She is now the third silver-producing country, and is easily capable of becoming the first. The Huanchaca Mine of Southern Bolivia is one of the greatest mining enterprises in the world, employing over 6000 people; while for the company working this mine what is said to be the finest amalgamation and reduction works in the world have just been built. Mr. Anderson says there is no silver mine in Bolivia, which has the support of sufficient capital and is under proper management, that is not making plenty of money at the present time. The gold district is now being prospected in the interests of some European capitalists, and railways are building or planned which will before long greatly facilitate communication and open up the country to trade and enterprises of all kinds. Finally the financial condition of Bolivia is said to be good. She enjoys the unique distinction among South American States of having no foreign debt, while her internal debt is but $6,500,000.

The mineral wealth of British Columbia, according to Dr. G. M. Dawson, the well-known Canadian geologist, is far greater than has been suspected. Dr. Dawson has spent 15 years in a geological survey of the country, and may be allowed to speak *ex cathedrâ* as to its resources. He states that large deposits of alluvial gold exist throughout the great area of British Columbia, testifying that there are rich gold-bearing veins traversing the rocky sub structure of the country, which only await skill and capital to yield the miner a rich return. Already the desultory alluvial mining alone has added some $50,000,000 to the world's gold supply. Silver-bearing lead ores are also found in various parts of the country, and the coal measures are generally distributed throughout its area. The opening up of the country by the Canadian Pacific Railroad has done much to encourage the mining industries, which, it is believed, will in time place British Columbia among the most important producers of minerals in the world. The conditions under which the mining development of the country is being carried out are most favorable, in regard to considerations of climate, location and general facilities.

Charging Machine for Blooming Mill.

The Pacific Rolling Mill Company of San Francisco had certain conditions to meet and difficulties to contend with in planning a charging machine for their blooming mill and 28-inch train. Their furnaces are unusually deep, being 12 feet in the clear on the hearth, and 20 feet long, and there are four doors. Then the machine had to turn end for end to a similar furnace opposite—these two furnaces being exactly 40 feet apart. The travel and length of the pinch bars are so arranged that a bloom for an I or deck beam, 12 feet in length, can be seized and withdrawn, so that the end of the bloom will clear the furnace and allow the machine to turn, travel and deliver its load to the mill.



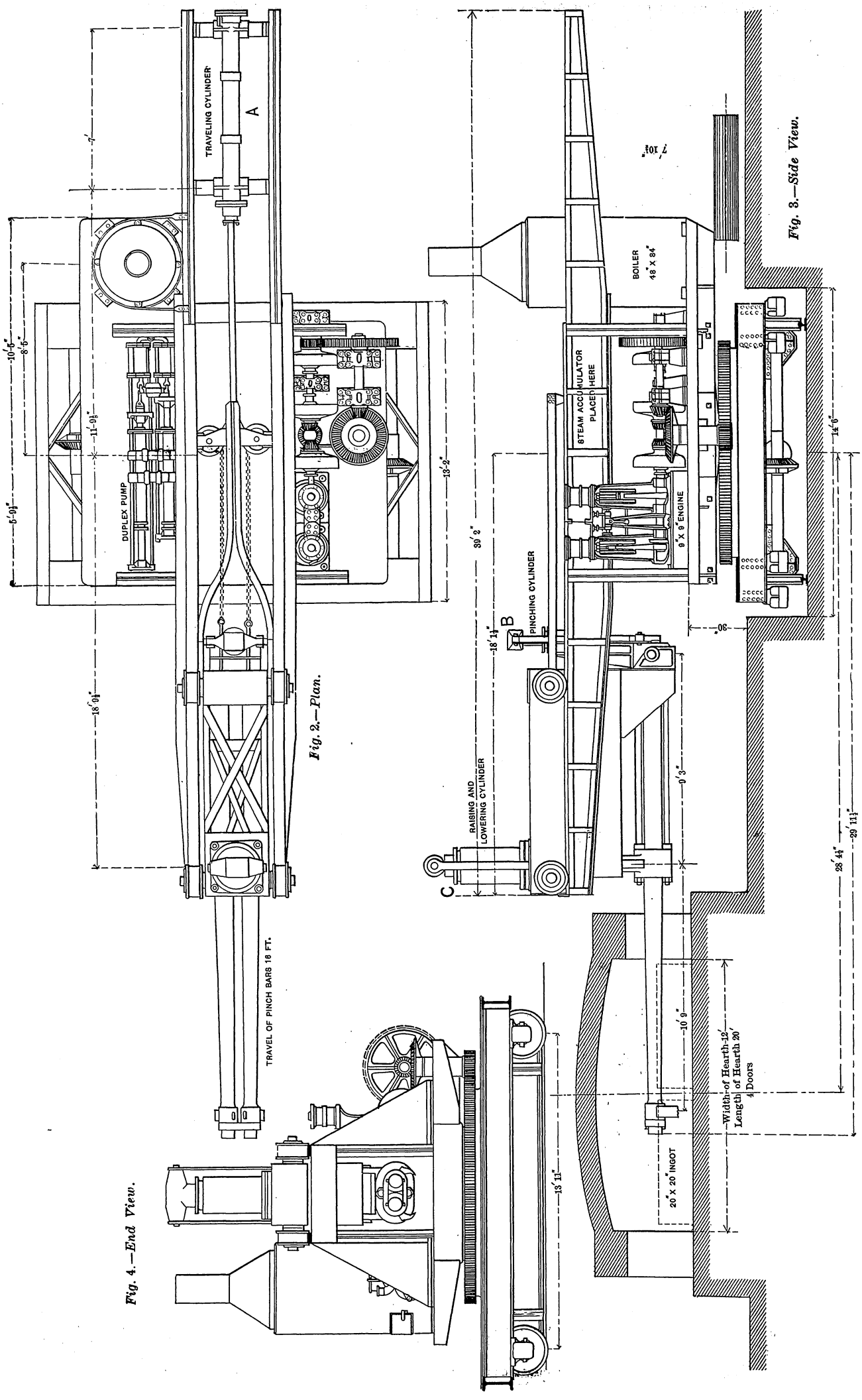
CHARGING MACHINE FOR BLOOMING MILL.

The machine has five distinct and separate movements: The first two are derived from a pair of reversing upright engines, with the necessary friction clutches for traveling or revolving separately or simultaneously. All this is plainly shown on the accompanying cuts, and will be described more in detail later on. The boiler shown has been left off, as it was found that the pressure in the steam mains was amply sufficient.

A hydraulic duplex pump furnishes power for the three hydraulic cylinders—one for traveling in and out, one for raising and lowering the load and one for pinching. A small steam accumulator has been added to the pinching cylinder to sustain the pressure when the pump valves are closed.

The charging machine has now been in constant use for several months and meets every requirement. It serves three furnaces—two facing each other and one facing the rolls. This machine was designed by William Leichter of the Pacific

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CHARGING MACHINE FOR BLOOMING MILL.

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Rolling Mill Company. We are indebted to Patrick Noble, superintendent, for the drawings and data which we present.

tion, Fig. 3. All movements of the machine are controlled from the platform and are as follows:

Raising and lowering the outer ends of the pinching bars.

Traversing the pinching bars.

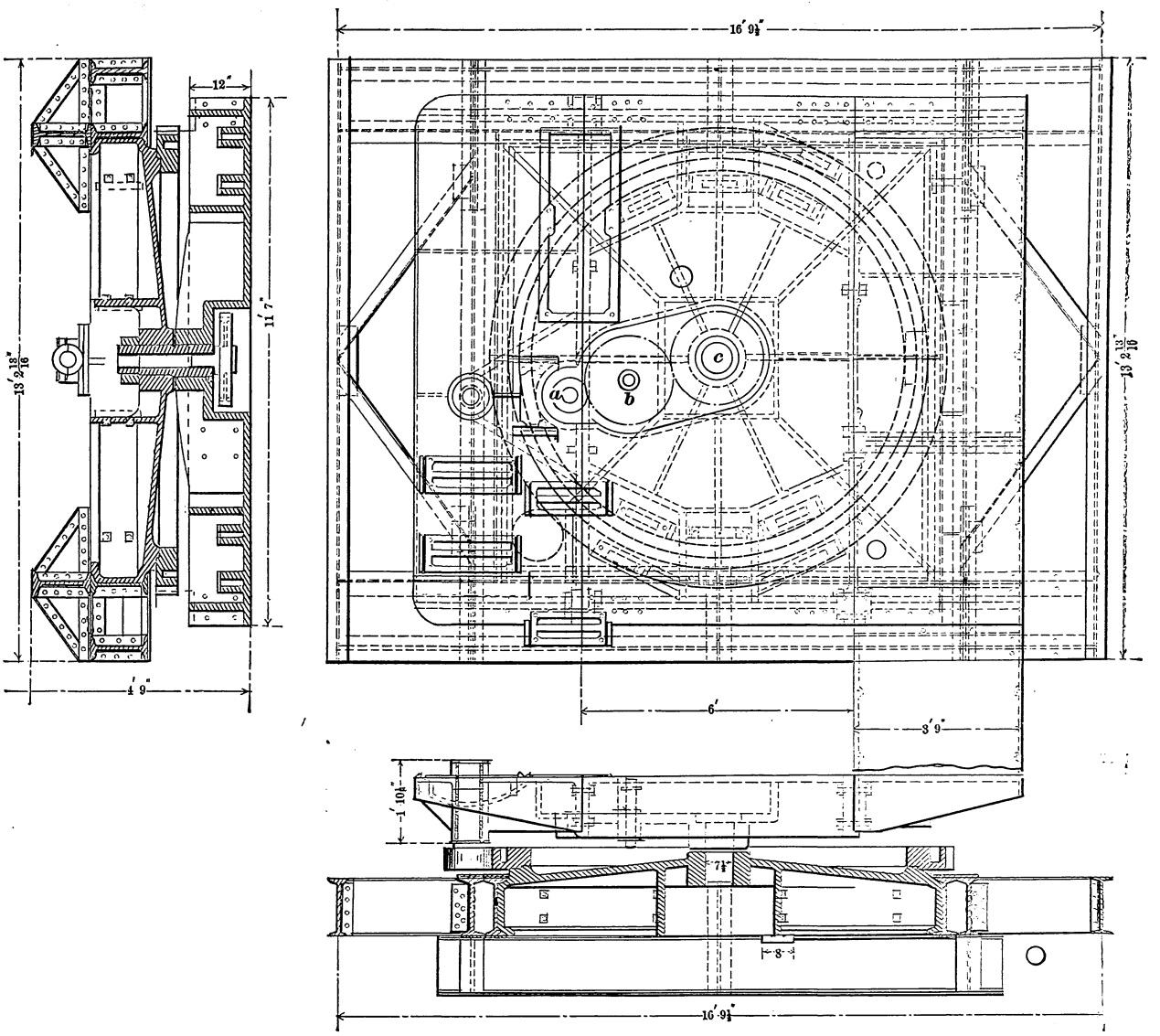


Fig. 5.—Plan and Sections of Turntable.

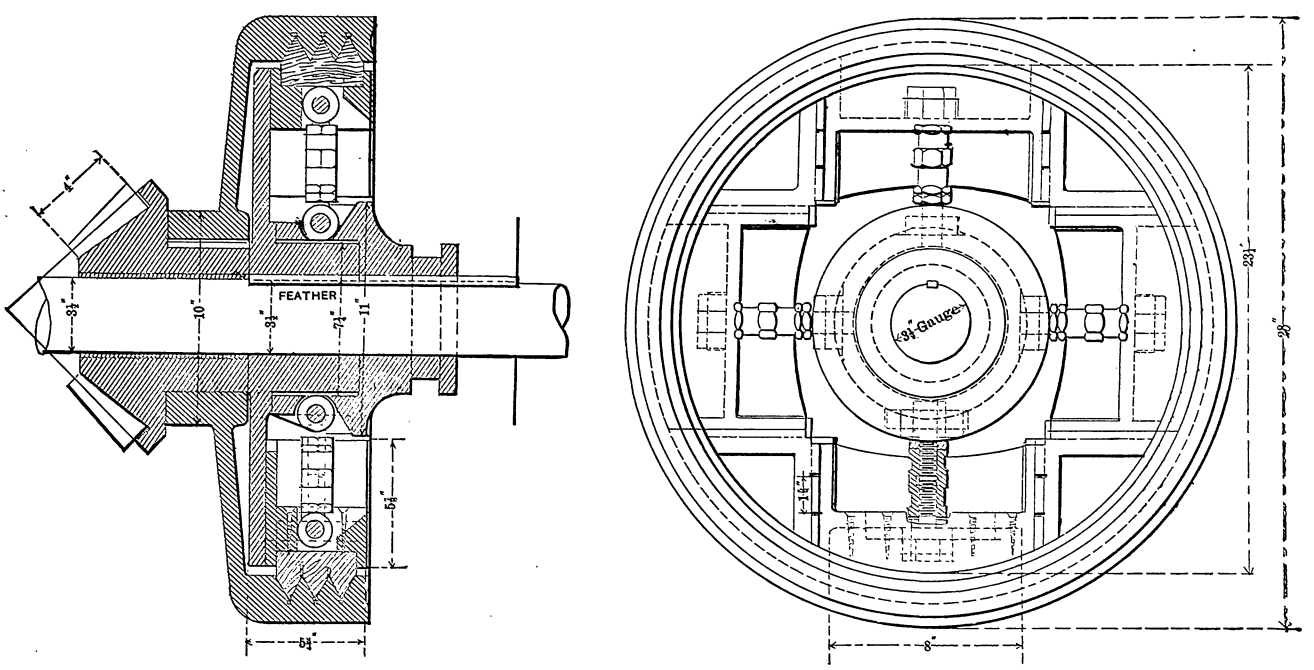


Fig. 9.—Section and Face View of Clutch.

CHARGING MACHINE FOR BLOOMING MILL.

Detailed Description.

The machine is run by a double 9 x 9 inch engine, placed at one side of the main frame, as shown in the perspective view and the plan, Fig. 2, and side elevation, Fig. 3. All movements of the machine are controlled from the platform and are as follows:

The traverse of the machine along the track, which is 11 feet ⅝ inch gauge.

Rotation of the machine on the turntable.

Closing and opening the pinching bars.

Raising and lowering the outer ends of the pinching bars.

Traversing the pinching bars.

The base of the machine consists of a rectangular frame of I-beams mounted upon four double-flanged wheels having a wheel base of 13 feet 11 inches. Placed with its center in the center of this frame is a

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circular rack, the upper surface of which forms the tread of the turntable carrying the machine proper. This rack is 123.22 inches in diameter, 3 inches pitch and 6 inches face. It will be observed from Figs. 2 and 3 that at the right-hand end of the engine shaft is mounted a pinion engaging with a gear on a short shaft placed parallel with the engine shaft and carrying at its opposite end a beveled pinion. This pinion meshes with a beveled gear placed on a vertical shaft, mounted in bearings in the frame of the machine. On the lower end of this shaft is a pinion engaging with the rack. By means of the mechanism just described the turntable can be turned in either direction independently of any other movement of the machine.

On the engine shaft is a beveled pinion, Fig 2, engaging with a beveled pinion on a short vertical shaft. It is necessary to transmit the power from this vertical shaft to the two axles in order to traverse the machine on the tracks. On this short vertical shaft *a*, Fig. 5, is a pinion engaging with the intermediate gear *b*, which in turn engages with the centrally mounted gear *c*. This train of gears is carried by the frame of the turntable proper. On the lower end of the central vertical shaft *c* is a beveled gear meshing with a gear carried by a shaft placed parallel with the truck and mounted centrally in the lower or truck frame. On each end of this shaft is a beveled gear engaging with a gear on the axle, as shown in Figs. 2 and 3. It will be seen that by means of the intermediate gear *b* power can be transmitted from the engines to the wheels, no matter in what position the turntable proper may be relatively to truck frame.

The general arrangement of the pinching bars will be understood from Figs. 2 and 3. They consist of two heavy shafts placed parallel with each other and carried by a frame having wheels arranged to travel on tracks formed by the upper surfaces of the girders of the frame. These shafts are 20 feet in length from the center of the rear bearing to the gripping points. The rear ends of these shafts are mounted in bearings, which, in turn, are mounted in trunnions. It will be observed that this construction, while permitting the axial revolution of the shafts, also admits of their forward or gripping ends being raised or lowered as may be required. In order to grip the ingot it is necessary to bring the gripping points forcibly against its sides. This is accomplished by the gripping cylinder B, Fig. 3, which is also shown enlarged in Fig. 6. The top of the ram carries a cross head, to each end of which is attached a link. These are so connected to the pinch bars as to cause their partial rotation and bring the gripping points against the ingot.

The raising and lowering of the outer ends of the pinch bars is performed by the cylinder C, Fig. 3, enlarged sectional views of which are shown in Fig. 7. The lower ends of the rods from the cross head of the ram connect with what we may term the central bearings of the pinch bars. The raising and lowering of the ram raises and lowers the outer ends of the pinch bars, which swing upon their trunnions as a pivot.

This entire portion of the machine is carried by the four double-flanged wheels adapted to travel upon the tracks formed by the top chords of the girders. The traveling of the pinching device is performed by the cylinder A, Fig. 2, an enlarged sectional view of which is shown in Fig. 8. The cross head of the ram carries chain wheels over which the chains pass, by means of which the carriage is moved backward or forward. Fig. 9 shows the principal features of the friction clutches. Water is conveyed from this accumulator to the pinching and raising and lowering cylinders by the jointed pipes clearly shown in the perspective view.

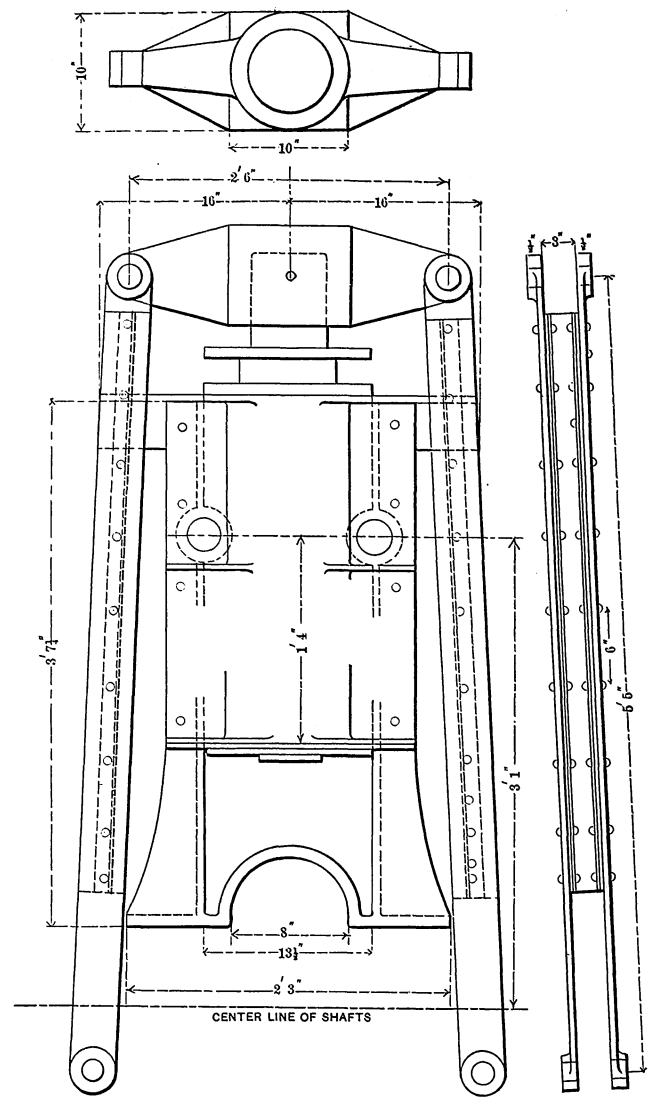


Fig. 6.—Gripping Cylinder.

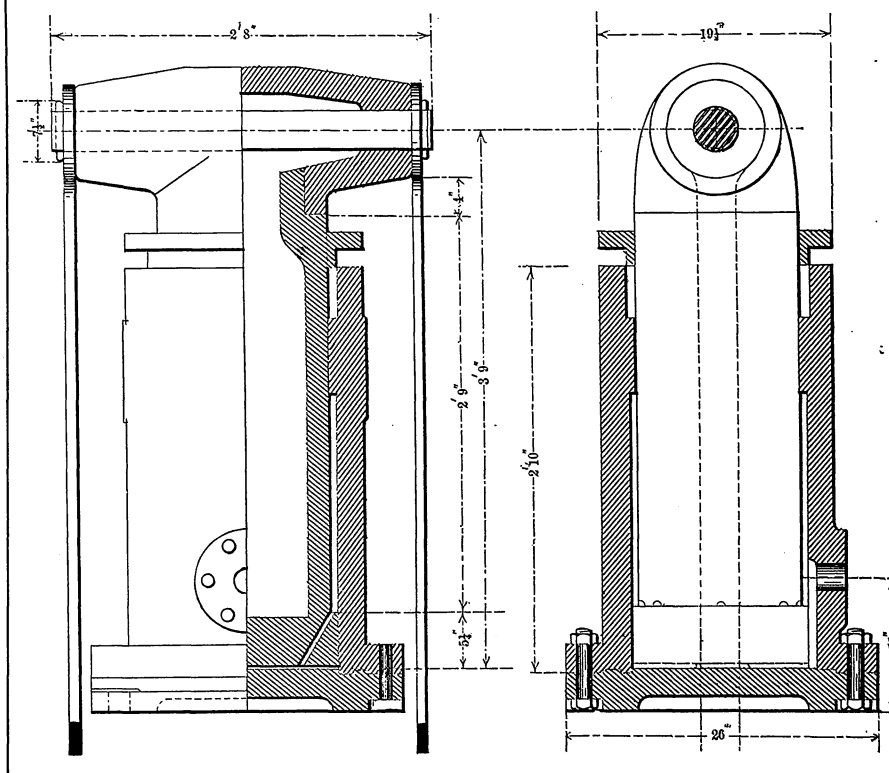


Fig. 7.—Raising and Lowering Cylinder.

CHARGING MACHINE FOR BLOOMING MILL.

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COKE.*

BY JONES WISTER, PHILADELPHIA.

The making of coke is a thrice told tale to those who live in soft coal districts, but we who live in the East and who use anthracite in our houses know almost nothing of soft coal and coking of it. Yet in our factories and blacksmith shops we thoroughly know its uses.

Almost every child knows the difference between hard and soft coal, and that is about all he cares to know. If the housekeeper desires to try soft coal in the grate he is met by various excuses as to why it cannot be done with satisfaction and economy. But after persistence he has the satisfaction of sitting before a beautiful glowing fire which warms and satisfies. After awhile the fire needs poking, and he discovers a substance different from the old familiar clinker, but hard and glowing. He has had his warmth and comfort, and has found something in his grate which he did not buy. He has, perhaps unintentionally, been baking coke.

Coke is cake made from bituminous coal instead of flour. The cake made from flour is light and cellular from the same causes that coke, made from soft coal, is honey-combed and not compact. The ovens in both operations are almost alike in construction, with slight modifications to suit the different uses. But the resulting cake becomes cake from the same causes. The slow escape of the gases under pressure of heat and the weight of the overlaying mass separates the dough in the one and the body of the pasty coal in the other. The gluten of the flour and the bitumen of the coal performing the duty of binding the cells at the point of contact, forming the entire structure into a cake.

Here, unfortunately, the resemblance ceases, for man has devised most effective methods to deprive flour of its vital principles, the phosphates and nitrates, which he feeds to the lower animals, while he eats the starch, fat and sugar. But when he seeks a fuel he is actuated by motives of wealth instead of health. He retains the bitumen, for without it his coke becomes dust or ashes.

While the standard coke for furnace use is hard and solid, it would seem that a coke of a less specific gravity might be advantageously used in the cupola. The blast furnace of to-day is 70 to 80 feet high, while cupolas range from 10 to 15. This difference may mean much to the foundryman. A 24-hour coke would seem better suited to his use than a 72-hour coke. But caution in such experiments is suggested. It must not be forgotten that charcoal is the ideal fuel and that coke is the best imitation yet produced. But hard coke, when hard burned, approaches anthracite in solidity, which is the important object for blast furnace use.

For quick combustion before tuyeres discharging air under a pressure of only 8 to 10 ounces, it seems highly probable that standard 72-hour coke is too compact and too much like anthracite in its nature to produce the best results in the cupola.

An atmosphere obscured by dense smoke notifies the traveler that he has reached the coke region. This smoke is the unnecessary waste, and is the constant companion of the coke baker of America, chiefly because a notion has long prevailed in the iron trade that coke made in any other oven than the beehive is unsuited for blast-furnace use. Closed ovens have been operated with perfect success in Europe for many years, and are slowly being adopted in America, though sinful waste is still the rule. The utilitarian concocts a scheme while passing through the coking territory by which he will save the escaping gases for purposes of illumination, which might, if put into practice in a business-like way, be successful. But he soon forgets the passing thought, and the waste, like the brook, goes on forever. When it is remembered that 10 to 12 gallons of coal tar can be distilled from every ton of such coal as is ordinarily used for coking, it is readily seen that the waste resulting from the coking of several millions of tons a year must amount to an enormous total.

Approaching the ovens, it becomes manifest that notwithstanding the great waste a large proportion of the original charge of coal remains after the volatile has passed off, which is the coke. The oven had been full to the top before firing, but two days subjection to a high heat has reduced its dimensions about three-quarters, though its weight has suffered only about one third. The resulting coke varies from 60 to 80 per cent. in different coals under similar conditions, while different processes also have a still greater bearing upon the results.

The so-called closed oven, in contradistinction to the open or beehive, is a foreign invention. It has been the means of saving much of the waste characteristic of the American system. Dr. John Percy says of the Appolt oven, "It appears completely to fulfill the conditions of a close vessel retort."

The investors claim that, although costly, it yields more coke per charge than any other oven, as compared with the cost.

This brings me to ask, whence this increased yield? In my address before your body on the evening of February 1, I said that if bitumen exists in a coking coal in larger quantities than that demanded for coking the mass, it remains within and permeates it and itself burns into a coke of a character much more solid and compact than coke made from low volatile coals.

My claim, stated briefly, is that the increase of yield is the result of the formation of coke from the bitumen or volatile. A scientific friend discredited the theory, and he has since written fully confirming his views.

My friend quotes from Dr. Percy, who is a most careful and exhaustive writer. But Percy wrote in 1875, which was before Professor Church demonstrated that the cellular construction of coke and charcoal gave them their great value and efficiency. Percy calls coke a solid product, and in one sense it may be so called. But he would no doubt use the word "cellular" if he were to re-write the definition. Dr. Percy has studied coke so fully that my friend has a most satisfactory backer, but the doctor says, on page 429 of his work on fuel, that at the conclusion of the process of coking in rectangular kilns, an accumulation of tarry matter always occurs immediately under the coal at the top of the kiln, which would further tend to prevent the descent of air from above as well as the ascent of currents from below, and it is there that the most solid coke is produced. It is not a fair inference that the solidity is produced by the coking of the tar or bitumen when this solidity occurs in its immediate neighborhood.

At the Montreal meeting of the American Institute of Mining Engineers a paper was read by J. D. Pennock of Syracuse, N. Y. On page 16, quoting from Watson Smith, he says that he believes that during the escape of the tar vapors from the decomposing mass, a portion of these must suffer complete coking, the pores of the mass becoming thus filled up, whereby the yield of the coke is increased and greater solidity obtained.

When it is remembered that these tar vapors will coke a given amount of anthracite or other dry culm, and further that after distillation they deposit upon the walls of the retort and become baked into a coke so hard and tough that the use of a sledge is required to fracture it, there is much reason in the claim that the tar or tar vapor solidifies and becomes coke.

*An address before the Foundrymen's Association, in Philadelphia, April 5, 1893, supplementing the address delivered before that body on February 1 last, and published in *The Iron Age* of February 2.

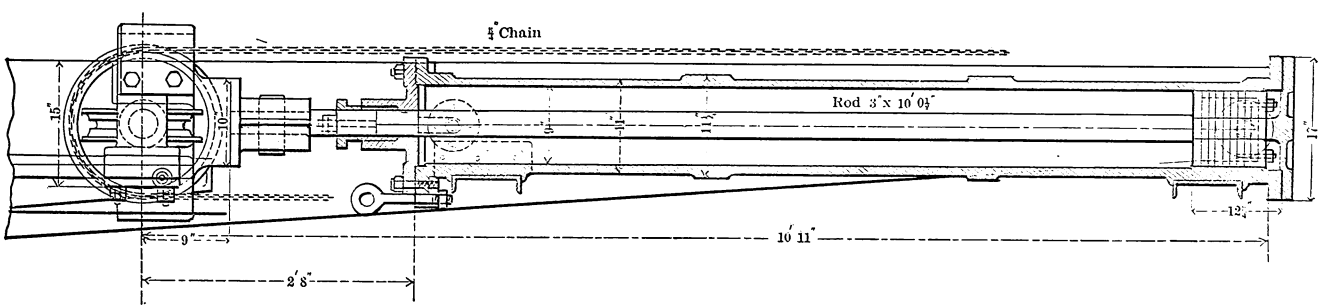


Fig. 8.—Traveling Cylinder.

CHARGING MACHINE FOR BLOOMING MILL.

A new method of tempering and hardening steel with the aid of electricity, but without that of a fire, has, it is said, been discovered by Captain Lagrange of the Belgian army. The piece of steel takes the place of the cathode or negative electrode of a dynamo or powerful battery. When the temperature of its surface rises very high the current is interrupted and the hardening is effected. With this method certain portions only of a piece of steel may be hardened, leaving the rest soft.

A British war steamer in the Mediterranean was accidentally run into by a torpedo boat and compelled to go into dock for repairs, though covered by 20 inches of plate.

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WORLD'S FAIR NOTES.

Battling with the Elements.

The work of preparing for the exposition has been a continuous battle with unpropitious circumstances. It would seem as if the elements had conspired to resist the most heroic efforts of man to complete the greatest undertaking in the history of universal expositions. There has been very little favorable weather for work of this character from the time the first sod was turned in Jackson Park. Last summer was a period of tropical storms, heavy rainfalls alternating with fierce winds, often developing into actual tornadoes, which not only checked work, but sometimes damaged what had been done and necessitated its complete reconstruction. The preceding winters had been comparatively mild, but last winter was the most severe and prolonged that was ever experienced in the Northwest. Only a few days of spring-like weather have smiled upon the workmen even in this month of April. As if to test the stability of the World's Fair structures to the utmost, a three days' storm of unusual severity raged last week. The wind blew with almost the fury of a tornado, shifting to every point of the compass during that time, apparently in search of points of weakness, while torrents of rain fell. For a few hours winter returned, with snow and freezing cold. The local signal service officer reports that at 3 a.m. Thursday the gale was blowing 72 miles an hour, and that the barometer was 28.92, the lowest Chicago has known since the office was established. When he says that the vibration of the Auditorium tower was so great that three of his observation clocks stopped running, the officials of the fair may well feel that the solidity of the fair buildings has been established. And not only did the immense structures of steel and glass stand the test, but State and foreign buildings, and even the nondescript structures on Midway Plaisance, weathered the storm. Most remarkable of all, the statuary, with a few unimportant exceptions, was not damaged. The worse feature was the renewal of leaks in the roofs, which, it had been supposed, were at last in good condition. Some of the large panes of glass in the roof of the Manufactures Building were broken by the force of the wind. This has developed a new source of anxiety, as visitors may be endangered during the fair by a similar occurrence, and the officials are now making

Plans to Catch the Glass.

Director of Works Burnham decided last Friday to let a contract for 1,045,000 square feet of wire netting to be placed under the glass roofs of four of the main buildings. By reducing square feet to acres it will be found that Mr. Burnham's contract will be equal to 24 acres. This is not regarded in the wire trade as a very large contract, however, as it will require only about 1500 rolls.

F. D. Millet, the director of decorations, has made a test of the kind of wire netting needed to protect visitors to the exposition from injury by falling glass in the roofs. The roofs are so lofty and the panes are of such weight and size that, should they strike a man's skull, they would crush it. Inasmuch as the Exposition Company cannot control the wind, Mr. Burnham decided to control the fall of glass.

The netting to be used will have a 2-inch mesh and consist of No. 18 wire. Mr. Millet stretched a sample of this size over a wooden frame and then, mounting the scaffold, let fall a piece of glass containing four square feet and sharp pointed on the netting. It dropped 12 feet and made no perceptible effect on the wire screening. Then he dropped two other pieces, also sharp pointed, without effecting any indentation. The wire netting will be placed 1 foot below the glass roofing, and Mr. Millet thinks that there will then be no possibility of accident by falling glass. The construction department has figured out that there are 47 acres of glass in the roofs of the main buildings. The wire netting, however, will not be placed under this entire surface. The roofs of four of the main buildings only will be cared for, and the following table shows the exact number of square feet which is to be protected by the netting:

Manufactures and Liberal Arts Building.

	Square feet.
Main court	295,000
Side galleries	305,000
Total	600,000

Machinery Hall.

	Square feet.
Main domes	45,000
Main clere-stories	125,000
Total	170,000

Agriculture.

	Square feet
Main building	145,000

Fine Arts Building.

	Square feet.
Central pavilion	53,000
Galleries	45,000
East and west pavilions	32,000
Total	130,000

Underneath the netting will be stretched an equal number of acres of cheesecloth to soften the direct rays of the sun and diffuse the light.

The Big Gun in Place.

On Friday the great Krupp gun was safely deposited on the carriage which it will occupy during the fair. So perfectly have the polished balls of the turntable revolved, so smoothly has every part of the Titanic apparatus done its work that not a single block of wood is disturbed in its place.

Standing with their feet deep in the moist sand of the floor, the German workmen from far off Essen saw the completion of their work. Herr Gillhausen, personal representative of the great gunmaker, looked on in triumph from his high stand on the carriage of a 75-ton giant. Back of the huge steel barrel, spotted now with the stains and rust of the long journey, lie the huge wipers and rods which are used in the loading and cleaning of the gun. Still further back on the sand lie samples of the great projectiles which this monster carries.

The carriage on which the great gun rests is built of steel, the different parts revolving on ball bearings. Cog wheels, levers and multiple chains are so arranged that it is easy work for the gunner to raise or lower, or turn in any direction the long barrel of shining steel. At the rear there are steps leading to the platform on which the gun crew is placed when the piece is in action.

Herr Krupp's agents do not hail the story that the great gun is to be presented to Chicago when the fair is over with any display of enthusiasm. If their chief has any such idea in view they know nothing of it. The specially built cars on which the monster was brought here have been switched out of the Krupp pavilion and on to the transportation tracks, where they will remain as a permanent exhibit until the fair is over. Then they will be brought into service again for the transportation of the gun back to New York, whence it will be returned to the works in Essen.

Three Men Killed While Installing Exhibits.

Three men were crushed to death while installing exhibits on the 16th. Two, James W. Warwick, a sergeant of ordnance, and Corporal M. J. Kernies, were killed by a heavy mortar gun which was being raised in front of the Government Building. The third was killed in Machinery Hall by a falling gang plank.

Warwick and Kernies were, with a number of other men, raising a 14-ton mortar to its carriage on the plaza east of the Government Building. When the mortar had been raised free from the supports upon which it rested there was a hitch of some sort and Warwick crawled under the gun to remedy the trouble. Just how the accident occurred is not known, but in some way he loosened a part of the hoisting tackle, which allowed the gun to slip from its fastenings and fall, crushing him and Kernies. Warwick's body was crushed flat and death was instantaneous. Kernies was at first not thought much hurt, but he died four hours later from internal injuries.

James Conway, check clerk in the employ of Superintendent P. Healy of the installation department at Machinery Hall, together with a gang of workman under Foreman M. J. Dugan, was engaged in unloading some heavy machinery in the annex to Machinery Hall when a heavy platform or gang plank used in transferring machinery from the car fell upon Conway and crushed him.

Cunard Ship Models.

The Cunard Steamship Company's unique and historic exhibit in the department of transportation exhibits will consist of a fleet of full-rigged models showing the development and growth of this line, from the "Britannia," built in 1840 (their pioneer ship), 207 feet long, 2000 tons, 400 horse-power, down to their latest leviathan, the "Campania," the largest steamship in the world, 620 feet long, 13,000 tons and 30,000 horse-power. This is but 60 feet shorter than was the "Great Eastern." These models have been in course of construction for over a year past at the company's yards in Liverpool by their own naval architects, and are drawn on a scale of ¼ inch to the foot. The Cunard Company's joiners are now engaged in the work of installation.

The models are inclosed in handsome glass cases, and rest upon elaborately carved tables of natural oak; an ivory tablet giving full description is attached to each case. In addition to the models it is intended to display photographs of modern ships, including their latest additions, the "Campania" and "Lucania," upon screens provided for the purpose.

Veteran Engines and Coaches.

A train that is a relic of the check apron period of railroad existence arrived last week over the Pennsylvania road. The train consists of a 60-year-old engine, "John Bull," and two passenger coaches 57 years old. One of these coaches was discarded 25 years ago by the old Camden and Amboy road and purchased by a farmer at South Amboy, who took it a short distance from the rails and converted it into a chicken coop. An agent for the Pennsylvania road out hunting for relics, discovered this chicken-coop coach and purchased it for the purpose of exhibiting it at the fair. The history of the other coach is somewhat similar. It was rescued from a Jersey City lumber yard.

The train was manned by veteran railroaders. The conductor, W. T. Bailey, has been a passenger conductor since 1859. The brakemen, Jonas Hagar and Thomas Gallagher, were brakemen in 1849. The engine driver, A. S. Herbert, drove the John Bull in 1852. J. W. Sanford, the fireman, was such in 1855. Car Inspector D. H. Baker, who accompanied them, has been foreman of the Jersey City car shops since 1849. Acting Assistant Superintend-

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ent James R. Smith, who directed the running of the train, has also been a railroad man over 50 years.

The New York Central Railroad Company have completed for the fair an exact reproduction of the "De Witt Clinton," and the coaches it drew on its first trip. The original "De Witt Clinton," the first locomotive run in New York State, was built at the West Point foundry at the foot of Beech street in 1831. The coaches are diminutive affairs compared with the modern Wagner palace cars and resemble in size and shape the old-fashioned stagecoach. They are hung on immense leather straps instead of springs and when in motion rock like ships at sea.

Alongside of this train at the fair will be exhibited a modern passenger locomotive, just built to draw the Empire State express. With this will be five new Wagner palace cars. The engine, which is No. 999, was built at the New York Central shops, at West Albany, under the supervision of James Buchanan. The designer claims that the engine is capable of drawing the five coaches at a rate of speed close upon 100 miles an hour.

The old locomotives mentioned above will not be the only antiquities in the railroad line at the fair. The province of Nova Scotia will send the "Samson," an engine built in Durham, England, early in the '30s. It made its first journey on the 7-mile railroad of the Mining Association in the Pictou coal region in Nova Scotia in 1838.

The "Samson" has a triple set of driving wheels, all of the same size. The tender is in front of the engine and the fuel is fed into the furnace directly beneath the smokestack, which is the biggest thing about the old machine. The engineer sits on an elevated and uncovered platform back of the boiler, and the fireman stands on a footboard between the engine and tender.

Condition of Machinery Hall.

Just now it is a debatable question around Machinery Hall as to the condition that the display will be in at the date of pressing the button. Lieutenant Robinson, who is in charge of the building, says that they could close the doors now and place what is already on hand in position and have a better display of machinery than has ever before been attempted, and that by May 1 the display will be far beyond anything that has ever been seen in that line.

The shafting for the motive power is nearly ready, one of the four lines being fully completed and another nearly so. The other lines can be made ready in three or four days, and will easily be in working order as soon as needed. Pulleys are not yet adjusted and will not be until the machinery to be served is located, when the pulleys can be quickly placed in position where they are needed. The portion of the building which appears to be the most nearly in order is the power plant, occupying one-quarter of the floor space and filled with engines of the most approved pattern.

With the exception of one battery of Stirling boilers, the boilers are all in place and have all been steamed up. They are a formidable looking row, comparing favorably in size with a row of cottages along a village street. The appearance of the boiler room will be surprisingly neat and clean to those who are accustomed to seeing coal used for fuel in such places. The heat for these boilers will be obtained by burning crude petroleum.

Engineer Wilkinson, who has charge of the mechanical department of all that Great Britain will exhibit at the fair, has been placed at a great disadvantage by delays of the railroads in delivering his freight. For ten days the Englishmen have been waiting and saying tart things about the delay in receiving their goods, but Mr. Wilkinson is confident that by putting on a large force of men he can have his work done in time to be in order May 1. The appearance of the space devoted to the British exhibit is a bit forlorn just at present and has been commented on by those who are anxious to prove that chaos and Jackson Park will be synonymous terms on the day set for the opening of the fair, but when those exhibits do arrive there will be a tremendous lot of work done in that corner of the building, and the fact that there are 24 hours in a day and 60 minutes in each hour will be demonstrated.

The Frenchmen are also far from being ready to receive company, but they, too, think that as soon as the delays of transportation which now surround them can be overcome they will make up for lost time and report their display as being completed when the time comes for opening the fair.

Happiest of all the people whose interests are in Machinery Hall are the Germans, who are pleased to think that by the provident disposition which is a characteristic of their race, their display is now very nearly ready and they can complacently smile and say "Gesundheit."

Another nation which is slow in getting its display in position is Austria, and it is said that some of the exhibits for which space was engaged will not materialize, and that others will not arrive in time to be seen on May 1.

American exhibitors have, as a rule, made ample preparations for getting their displays in place, and many of the machines are now in position and ready for exhibition. Perhaps the most forward of the exhibits is that of the different loom manufacturers of Worcester, Mass., in which city a very large percentage of all the looms used in America is made.

Working by Night.

Electric lights, sufficient to allow the work of installation to proceed by night, have been placed in most of the great buildings. It is a matter of the utmost importance to those who are responsible for having the exposition ready on schedule time The electrical engineering department has been anxiously watched and hurried onward by those in charge of the fair, for until the lights were up nothing could be done after six o'clock toward placing exhibits and building pavilions.

The main point is the Manufactures Building. That is the largest space to be covered with exhibits and the most important to complete. The lighting of this building has been a study. It will alone contain more electric lights than the entire Paris Exposition contained.

Arc-light Engineer G. B. Foster has had charge of the work. The equipment consists of 1196 arc lights. Besides these there will be myriads of incandescent globes and innumerable lights for exhibits. The 1196 lights are for the Exposition Company and are deemed necessary for the permanent lighting of the building. This equipment is divided into 24 sections, each operated by a switch, which can be shut off and opened at will. The side aisles and outside colonnades are provided with diverging rows of 50 lamps each. The galleries are supplied in the same manner.

The main hall between the great steel trusses will contain five immense crown-shaped coronas, or "electroliers," as they are called. They are swung from the rafters and are 140 feet above the floor. Four of the huge chandeliers contain 78 lamps each, and the center one has suspended from it 102 lamps. The central electrolier will encircle the apex of the clock tower. These lamp holders are 68 feet in diameter and are constructed of steel latticed work. Each lamp is of 2000-candle power, making the lighting power of each corona equal 156,000 candles.

To supply the current for the Manufactures Building's plant requires 24 dynamos, each of 1200 horse-power. These have been put in place in Machinery Hall.

Partial light will be furnished in the Agricultural, Mines, Transportation and Machinery buildings. All these lights belong to the permanent plant. Hereafter the electrical department will put in no temporary lights, but will push forward its work of permanent lighting.

The Ferracute Machine Company of Bridgeton, N. J., have recently shipped two full carloads of machinery for their exhibit at the Columbian Exposition. This machinery consists of 12 power presses, the largest weighing about 12,000 pounds, 4 foot presses, 3 spinning lathes, polishing machinery, several smaller machines for beading, trimming, threading, &c., and about 40 pairs of dies. They have secured an excellent space, 30 x 25 feet, on the corner of two principal aisles and under one of the electric cranes, in Section 13, columns I J. 42 and 43, in the center of Machinery Hall Annex, near the large engines. This will be handsomely fitted up with a line of shafting, an engine of their own, counters, benches, an office, and with a large line of samples showing every kind of sheet-metal work. All of this machinery will be kept running with a number of operators, and several different articles will be manufactured in tin, brass, aluminum, &c., in order to show the practical working of their presses, dies, &c. They have made a contract with the Pittsburgh Reduction Company to manufacture all the articles from their metal which are made in sheet aluminum in the exposition grounds, and this in itself will be an interesting object to visitors, as aluminum is now being used for so many household articles, in addition to fancy goods, &c. Among other articles manufactured by the Ferracute Company will be pie plates, pans, skillets, drinking cups, fancy plaques, jewel boxes, napkin rings, puzzles, &c., and their exhibit will illustrate a complete metal-working establishment. Fred. F. Smith, secretary of the company, will be in charge of the exhibit, assisted by the foreman of their press shops, Edmund Hoffman, with one or two assistants from the factory and others which they will secure in Chicago. Nearly all of the machinery exhibited will be from new designs recently brought out and will show all the latest developments in sheet metal presses and dies.

Items.

The Electrical Forging Company of Boston have 1955 feet of space on the first floor of the Electrical Building at the World's Fair. They will put in a 200 horse-power heating plant driven by two 100 horse-power motors. They will exhibit an electrical cooking process and machines for rolling metals and making forgings, &c.

The Joint Committee of Ceremonies of the World's Columbian Exposition, through Secretary Culp, has notified A. J. Dowd, chairman of the Columbian Associated Travelers, that the Committee on Ceremonies has decided that there will be but one day set apart for the commercial travelers of the United States and the world. That date has been heretofore set apart by the Director General, and is July 26.

The General Electric Company have received a 25-car train, which was started from Schenectady on the 19th in charge of a special messenger. The train contains the armatures for a 1500 horse-power Edison lighting generator to furnish light for the Electricity Building, two carloads of electrical material for the electrical fountains, nine carloads of exhibits, and

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two of the large generators for the intramural railway. The estimated value of this consignment is $225,000.

The Steel-Plate Friction Clutch.

The essential features governing the working efficiency of a friction clutch are, broadly, the material and construction of the friction surfaces, and the operating mechanism by means of which the faces of the driving and driven sides of the clutch are made to engage or release, as desired, in starting and stopping. All other features may be considered as matters of detail, affecting what may be termed the passive and the active qualities of the device. Nearly all makers of this line of specialties have some peculiar form of mechanism or material, distinctive of their style, and upon which their claims for recognition or superiority are based, and consequently the number of classes and patterns is quite large. The difference in the classes refers principally to the location and construction of the friction surfaces, while that of the various patterns of each class may be considered as applying to the nature of their distinctive friction material and of their operating device.

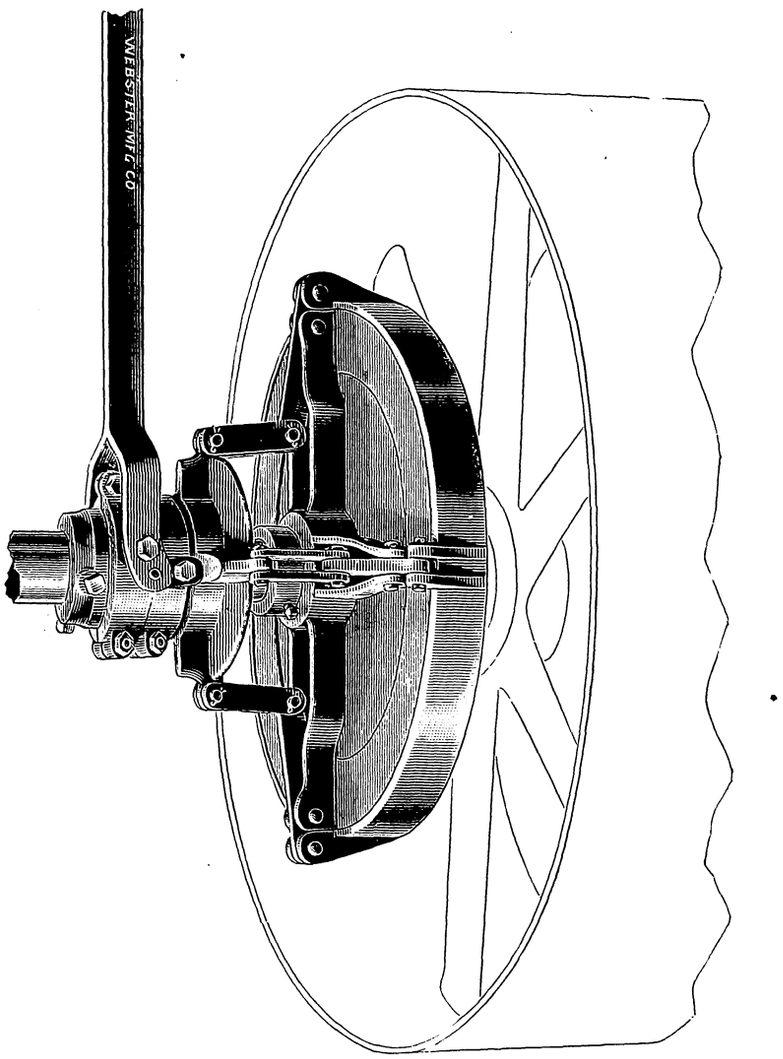
In order to intelligibly classify the several styles, the body of clutch may be divided into its component parts of hub, web (or equivalent arms or spokes) and rim or periphery, upon one or the other of which the grip is applied. Of the first we have two classes—the hub, external or face, and the hub flange. Of the second it may be considered that there is but one, although there are several modifications. The third includes three classes, which employ, respectively, the external surface or face of rim; the internal face; and both internal and external faces—the rim being gripped in such a manner that there is neither inward nor outward strain, but one of compression merely. There is also another class in which both the rim and hub are employed, and being in effect a female cone. In nearly all these classes one or the other of two distinct types of actuating device is used. The first is actuated from the sliding collar on the shaft by means of a system of levers jointed to it and so arranged as to form a toggle, and having the adjustment such that it will be self-locking by reason of passing the center or straight line just sufficiently to prevent the tendency to spring back from position.

In the second the same result is attained by means of a sliding collar having a face conical with the exception of a small portion of its length, which is straight or cylindrical. In the released position the long arms of the levers (from two to four in number) are free, and rest without contact within a short distance of the shaft. By sliding the conical collar forward it raises the ends of all the levers simultaneously to a point at which the friction surfaces will have the required pressure, when, by continuing the motion, they will rest upon the straight surface of the collar, thereby relieving the tendency to fly back, and locking them in position. With both of these devices it is necessary to provide some form of independent adjustment for each lever, so as to equalize the pressure they exert, and to insure that when in the locked position it shall be sufficient to give the friction necessary for the drive. The shifter lever is usually fulcrumed to the ceiling or timbers overhead, and is made to straddle the sliding collar, which it engages by means of straps running in a suitable groove in the latter. Being made usually partly or wholly of iron it has considerable weight, and must therefore be secured in either one or both of the positions corresponding with engagement and release of the clutch, as otherwise the continual jarring and vibration caused by the motion of shaft would cause it to drop into the vertical position.

The safest method is to have the lever stand vertical when the clutch is released, and to secure it by some reliable means for the working position. By this arrangement any accidental shifting of position of the lever would be free from any liability to cause accident, as it would merely result in the stoppage of transmission by the clutch; whereas, if the conditions were reversed the sudden and unexpected starting of the shaft or pulley to which it might be attached would be exceedingly dangerous. If hung so as to be vertical at mid-position, of course the lever should be secured for both engagement and release. Nearly all types of friction clutch may be used with equal facility for either driving or driven pulleys, or for cut-off couplings. For the latter, however, the conditions are far more simple than in case of the former, as when disengaged the motion beyond the driving half of the clutch is entirely stopped; whereas, either a driving or a driven pulley is subjected to wear in the bore—if the former, the shaft revolves while the pulley is at rest, and with the latter the pulley continues its motion on the stationary shaft.

In both cases it is necessary to provide means for preventing damage from undue wear of the bore, which is usually done by lengthening the hub and bushing it with phosphor bronze or some other durable anti-friction alloy. Of course the effect is more objectionable in the driver than the driven pulley, as the wear comes all upon one side of the bore so long as it remains in the same position, and in time is liable to render the hole so much out of round as to cause the pulley to run badly and necessitate rebushing. In case of the driven pulley, of course all this tendency to unequal wear comes on the shaft, while the bore remains true. As a fact, however, the wear of the shaft from a good bushing is not very rapid.

The materials used for the friction surfaces are numerous. Cast iron, brass, bronzes of different mixtures, Babbitt metal, lead, and even steel and wrought iron, hardened and soft, are among the metallic agents employed; while of other materials may be mentioned woods—hard, soft and medium—vulcanized fiber, paper, rawhide, leather, hemp, &c. While all of those enumerated may be considered good for the purpose it would be difficult to say that any one is the best, as it is more a matter of the construction than of material, by which satisfactory results are obtained.



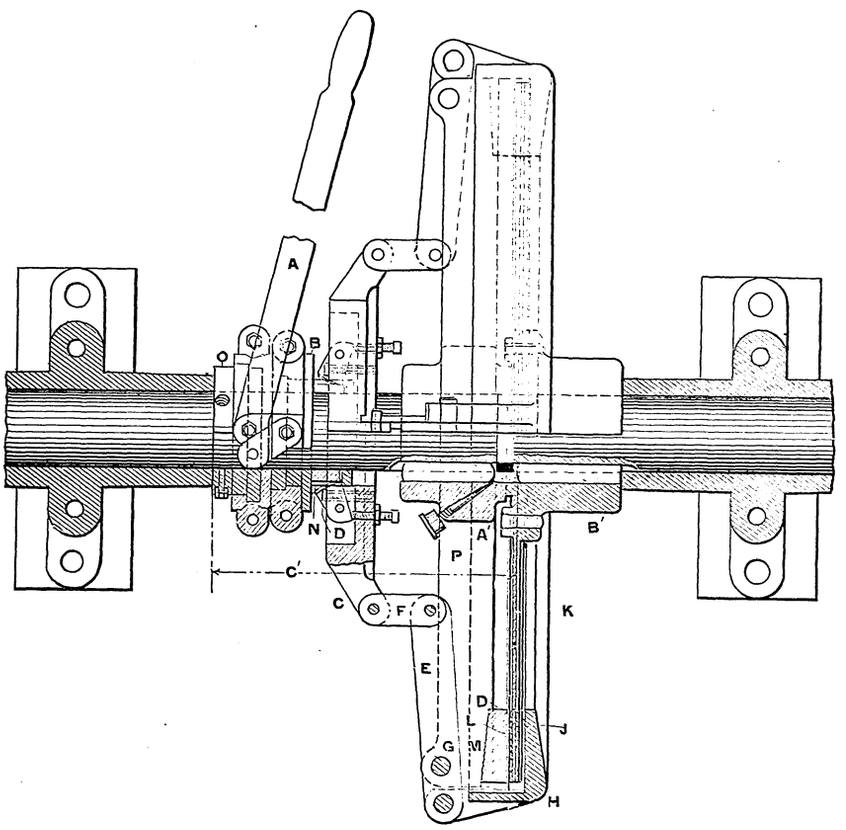
THE STEEL-PLATE FRICTION CLUTCH.

The Steel-Plate friction clutch, which we illustrate, may be regarded as a radical departure from the usual practice in respect to both the design of operating devise and arrangement of friction grip. Its peculiar construction also imparts a very considerable degree of flexibility between the fixed and releasing portions of the clutch, the effect of which will be referred to later. While there are several novel features embodied in the device, the most important is the entire absence of necessity for any grip adjustment, and the

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requisite pressure between the friction surfaces is obtained by merely forcing the shifting lever far enough toward the engaged position—there being no limit to its stroke other than that caused by the contact of the faces. Of course a certain amount of original adjustment is necessary, but this is made in the shop, being really part of the construction, and no subsequent changes are necessary, save as a matter of convenience to prevent too great a throw to the shifter in engaging.

The construction, as shown in the drawing, is very simple. The driven side of the clutch is composed of a flexible flat disk of steel boiler plate, K, securely bolted to a flange, B', on the pulley hub, or, in case it is used simply as a cut-off coupling, a plain flanged hub keyed to the shaft. The friction faces, one on each side of the disk, near the periphery, are of compressed manila paper, and are fastened to the



THE STEEL-PLATE FRICTION CLUTCH.

plate by means of hardwood pins or plugs, driven tightly into holes drilled through paper and metal, and the whole afterward turned off true and smooth in the lathe. The body of the operating or driving half is of cast iron, and consists of a hub, A' (keyed to shaft), and either arms or web carrying the periphery, upon which are formed a friction face corresponding with that on the steel disk and the lugs in which the actuating levers are fulcrumed. A cast-iron ring, H, having an internal flange, is made to telescope with the rim of body, and by means of extension lugs connects with the outer ends of four straight levers, E, equally spaced around the circumference. The internal flange of this ring H is turned true to form a second friction face, and is located on the opposite side of the disk from that on the body of the driver. The latter is so located with reference to the disk that when in the disengaged position it may revolve without contact of the two faces. It will be seen that the disk is between and embraced by the faces L and J of the body and the movable ring of the driver, which are drawn together by the inward movement of levers to afford the necessary contact pressure. A cast-iron flange and sliding collar are located on the driving shaft next to the clutch hub, leaving ample space between to afford the necessary movement. Upon the periphery of the flange are four extension lugs, corresponding with those on the body of the clutch, and to these are connected by means of short links the ends of long arms of levers. Back of the flange on this collar is a strap running in a deep groove, and to which the ends of jaws of shifting lever are connected by means of short links. The lever D is fulcrumed upon a fixed collar B, held by four set screws, which is so placed as to act as a stop for the sliding collar in the disengaging movement of the latter. By observing the proportions of leverage between the shifter and the friction ring of the driver, it will be seen that the amount of power or pressure exerted is very great, and the possibilities in this respect must far exceed the requirements.

It is also obvious that this pressure may be exerted well within the limit of the proper movement of the lever, and that so long as the position of the latter remains unchanged after engagement the grip cannot alter to permit any danger of slippage. The usual adjusting screws on the actuating levers are, therefore, unnecessary, even though the wear and tear from long-continued use should cause a very considerable aggregate of lost motion in the several pin bearings, the only effect of which would be to require a longer throw to the shifter. The device for locking the clutch in contact may be termed a friction pawl. It is in reality two pairs of opposed links or toggles of very simple construction, which by exerting great pressure on four wrought-iron or steel shoes bearing on the shaft, prevent any backward movement of the sliding flange in which they are fulcrumed. They are shown in the drawing, where their positions coincide with those of the lugs to which the levers are connected. Their bearing faces form an arc eccentric with the pin upon which they are hung. The set screw and jamb nut engaging the upper point of pawl is adjusted to prevent unnecessary movement of the latter in releasing. In the flange, midway between the pawls, are four large set screws so adjusted as to allow a certain amount of motion of the sliding collar before it strikes the screws, which form the only contact between flange and collar.

The operation of the clutch is briefly as follows: By throwing the shifting lever A to the right the sliding collar B is thrown forward until it comes in contact with the set screws in the flange. At the same time the free ends of the pawls D are forced inward, and by their eccentricity begin to bear on the shoes, but not sufficiently to interpose any appreciable resistance to the free movement of the flange, which, after the contact is made, is thrown toward the clutch and depresses the levers C F. The latter, by drawing the outer friction bearing toward the flexible disk, spring it over sufficiently to take up the clearance between it and the driver, and by continuing the motion the required grip is obtained. As soon as the shifter is released the tendency of the levers is to force the flange backward, but this is very effectually resisted by the pawls, which the movement of their point of suspension causes to roll back on their constantly increasing length, and put a corresponding pressure on the shoes, thus gripping the shaft with great force and checking the movement without any possibility of slippage.

In disengagement, the shifter being moved to the left, the sliding collar first engages the lower end of the pawls and forces them backward while their fulcrums remain stationary. This trips them and releases the pressure on shoes, while the upper end strikes the set screws and limits their motion, and at the same time draws back the flange and levers, which releases the clutch. In all details, such as refer to the provision for wear of bore or shaft, the usual practice has been followed, and the construction throughout is made to insure both durability and efficiency. The clutches are made by the Webster Mfg. Company of Chicago, by whom they were placed on the market some time since, after over a year's use in their own shops, where they have been used exclusively.

The annual reports of the inspectors of mines in Great Britain, which have just been issued, give the total yield of British mines in 1892 as 191,954,908 tons, of which 181,786,871 tons was coal and 5,644,486 tons was iron ore, the rest being fire clay, shale and the lesser minerals. The whole output is 5,738,684 tons less than that of the preceding year, the decrease of coal being 3,692,255 tons and of iron ore 1,584,664 tons. The total number of persons employed in connection with the mines of the United Kingdom last year was 721,808, of whom 6099 were females. In all there were 862 fatal accidents, occasioning 1034 deaths, being 1 death for every 679 persons employed.

An interesting fact brought out in the reports is that the occupation of the miner is very much safer now than it was before the passage of the mining acts, the average of fatal accidents having sensibly decreased. Formerly the average of deaths was as high as 1 in every 233 persons employed.

Chicago is proud and happy to accept as a gratuity the big Krupp gun, which weighs 270,000 pounds and cost $80,000.

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Basis of Duty Rating of Steam Motors.

Considering the rapid advance during the past few years in development of the efficiency of steam actuated machinery, it appears somewhat singular that the methods of measuring the results obtained should not also have been the subject of a like degree of improvement, and that the antiquated, crude and indefinite standards have not been universally discarded. Certainly any basis of comparison involving the consideration of extraneous conditions or quantities must involve more or less complication and uncertainty as to exact results, which necessarily detract from their value, and can be excusable only in default of sufficient knowledge of the subject to enable us to devise a more exact method. Modern scientific engineering surely is not a matter of guess work. In all essential features it may be regarded as one of the exact sciences, for the reason that its fundamental theories are confirmed by actual practice, or at least by experimental demonstration by numerous authorities whose several results agree so nearly as to warrant their universal acceptance as factors in our calculations.

The continued use, then, of the imperfect and misleading methods referred to—as it cannot be attributed to lack of knowledge for adopting a better—can only be accounted for on the ground of tradition; it is the rut out of which it is difficult to climb, because it has been a universally accepted practice in the past, and for that reason only it must be all right.

With reference to efficiency tests of a steam plant—that is, the entire system of generating, conveying and utilizing apparatus—there is probably no better method available than the one now in use, in which the basis is a comparison of the effective work realized from a given quantity of fuel consumed. But even here there is an unnecessary distinction made for different applications of the steam power. For an engine designed to furnish power by transmission for general purposes the economy or efficiency rating is based on the consumption in pounds of fuel per horse-power per hour, or by a more recent method (not generally used, however) on the consumption of steam in the denomination of pounds of water per horse power per hour; but an engine, even though it may be of exactly the same type as the former, if used to actuate pumping machinery, is rated according to the resultant number of foot-pounds for a fuel consumption of 100 pounds of coal. If the duty in the former case is satisfactorily expressed in terms of pounds of coal or water per horse-power per hour, there is no apparent reason for considering it less applicable to the duty of pumping, and thereby avoiding an unnecessary distinction involving a difference of basis and multiplication of methods. If, for the purpose of greater convenience or accuracy of results, the latter method is desirable, it is equally so in case of the power engine, to which it is quite as applicable. Where can be the necessity for, or advantage of, the distinction, when in either case the results represent only the comparative ultimate utilization of an ascertained proportion of the known heat energy of the fuel, which is the only crucial test of efficiency?

It is true that an engine used for pumping, whether independent or combined with the pump as a unit of construction, is not considered simply as to its individual efficiency as a motor, but almost invariably as a pumping machine, in which the pump itself is an equally important factor. A power engine, on the contrary, is rated entirely with relation to the amount of power developed at the point of transmission—say the crank shaft. These facts, however, are very generally understood, even by the layman, and the expression of efficiency in the terms of either method would be self-apparent in either connection. Of course, while uniformity of terms is desirable for the sake of simplicity, it is by no means essential as to correctness of results or their mode of expression; and its absence, therefore, is not open to criticism, except on the score of convenience. But this is true only with reference to tests of efficiency of the entire steam plant, considered from the standpoint of cause, represented by the cost of fuel and attendance; and effect, in the shape of useful work accomplished.

It is needless to say that such tests are exceptional, and that, as the individual efficiency of the component parts of the plant—*i.e.*, the generator and the motor—one or both—is made the subject of separate investigations, the application of any such method must be barren of accurate results so far as the motor is concerned, though, of course, correct with reference to the generator, provided careful and complete evaporation data be obtained.

Let us suppose, for instance, that it is desired to ascertain the efficiency of an engine furnishing power for transmission, and apply the usual mode of procedure, which is, briefly, to keep accurate records of fuel and water consumption and weight of refuse, as representing the cost; and the work performed by the engine, as ascertained from a series of indicator cards, taken at short intervals during the entire period covered by the test. The indicated power of the engine, whether in foot-pounds or horse-power, certainly represents the amount of work realized from a given quantity of fuel, but, just as certainly it cannot show the net efficiency of the engine, on the basis of either fuel or water consumption. The reason is obvious. Fuel will be used in proportion to the evaporative efficiency of the boiler, and, therefore, can become a factor only as governed by the latter, which is not stated where the engine is rated on fuel consumption per horse-power per hour. Consequently, it means absolutely nothing.

Water consumption is a little nearer the mark, as it eliminates in part the question of boiler efficiency. Not entirely, however, as the consumption of feed water does not by any means indicate true evaporation to steam at normal saturation. There are many causes which may exist in the boiler to affect the quantity of water carried into the steam pipe, and, as its place must be supplied by the feed, it is, therefore, charged to the engine, notwithstanding the fact that the latter not only derives no gain from its presence, but actual loss to a very considerable extent. Or, suppose the evaporation by boiler to be all that could be desired, and the steam delivered to the header at a saturation to its pressure. There is inevitably more or less condensation in the pipe between the boiler and engine throttle, and this represents a corresponding loss of efficiency in the steam—usually not a trifling one. Nevertheless, as the boiler has delivered it, the weight of steam it represents is charged to the engine; though, again, it suffers from the presence of the contained water, beyond the shrinkage in volume of the steam.

These are but two of the many conditions which may cause a grave discrepancy to exist between the apparent consumption of steam by the engine, as measured by the feed water, and the actual amount fairly chargeable to it as at normal temperature and saturation. As these facts are beyond question it logically follows that the results of efficiency tests on either fuel or water consumption basis are fallacious, and manifestly unfair to the engine. The plan is sometimes adopted of rating an engine by the indicated power developed in connection with certain assumed evaporation, fuel consumption, &c.; but as this is much in the nature of guesswork, it can hardly be accepted as a conclusive or satisfactory test.

The question is then: What method can be employed which will not be open to one or all of these objections? Broadly answered, it should be on the basis of the quantity of heat actually delivered at the engine throttle, by steam at normal saturation, through a pipe of ample sectional area to prevent any loss of energy from friction or wire-drawing. All water, whether carried over in mechanical suspension from the boiler, or from condensation in the pipe, should be removed by some efficient form of separator located as nearly as possible to the throttle-valve, beyond which point all subsequent losses of heat and expansive energy are properly chargeable to the engine.

Of course it is not the intention, in this connection, to go into the details of such a method, but merely to consider the correctness and applicability of the heat basis suggested. If, then, the steam be delivered at the throttle, freed from all abnormal conditions due to generating and transmitting, the indicator card should be a correct exhibit of its action in the cylinder under the rated load of the engine. The net amount of the latter may be determined by comparing the friction card of engine alone with that representing full load, and may be figured in foot-pounds. The net steam consumption, actually ascertained by deducting the weight of discharge from separator from that of feed water, may be considered by its contained heat in terms of thermal units, and the result of test stated by the number of foot-pounds per 100, 1000 or 1,000,000 heat units, which, being an exact quantity, represents accurate information.

This method has been used by some of the largest engineering concerns in the country, notably the Henry R. Worthington Company in testing the efficiency of their high duty pumping engines. There does not seem to be, however, any good reason, on the score of utility, for multiplying the figures by stating results in millions of foot pounds per 1,000,000 heat units, as has been done, for the reason that a comparison of the two quantities may be quite as accurately made by using a single heat unit. Thus, in case of a duty of 109,850,000 foot-pounds per 1,000,000 thermal units, the statement would be 109.85 foot-pounds per thermal unit—certainly less cumbersome than the former. By this method, the percentage realized of the full theoretical possibilities may be instantly ascertained. We have only to divide the duty found by Joule's equivalent—772 foot pounds per heat unit —thus, $\frac{109.85}{772} = 14.23$ per cent. Such a comparison might be even a better statement, and the expression of duty rating be in percentage of theoretical equivalent.

In spite of fanatical prejudice on the part of ignorant natives and powerful antagonistic influence brought to bear by those who should be more enlightened in their views, railways are making real headway in China. One line is in actual operation—the China Railway, from Tientsin to Kaiping, a distance of 85 miles, and another is in course of construction, which will extend northeast from Tientsin, to be called the Imperial Railway of North China. Needless to say it is foreign capital and enterprise which have initiated this revolution in the most conservative of countries. Meanwhile we read of the first railway train having been run in the neighboring Kingdom of Siam a few weeks ago. This train is one that will operate on the railroad which is being constructed by a German firm to connect Bangkok and Korat, a distance of 165

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miles. So the iron road is being gradually pushed through the countries of the far East.

Tests of "Thomas" 1X Foundry Iron.

A series of test plates and bars for tensile and transverse breaking strength were made from 1X Thomas iron by melting 1 ton of iron in a cupola with anthracite coal. No other iron was used. The plates, 6 x 8 x ¼ inches, were cast in flasks, and were not annealed in any way, and were punched on a regular punching machine, and handled in every way as if they had been made of the best flange iron.

Two of the plates were punched until they cracked so as to show the ultimate resistance to this test, and on two plates the punching test was stopped before the plates cracked. The effect of this treatment and the extent to which it was carried out are shown in the accompanying engraving reproduced from a photograph.

The test bars for transverse and tensile test were cast on end, and below is given the test of six samples of each. The test bars for transverse test were 1 x 1 x 15 inches, and were broken in a Riehlé testing machine, the supports being 12 inches apart.

Transverse Tests.

	Pounds.
No. 1 bar	2,490
No. 2 bar	2,365
No. 3 bar	2,935
No. 4 bar	2,570
No. 5 bar	2,760
No. 6 bar	2,440

Average, 2593.33 pounds ultimate transverse breaking strength.

The bars for tensile strength were round and made equal to 1 square inch.

Tensile Tests.

	Pounds.
No. 1 bar	18,484
No. 2 bar	19,683
No. 3 bar	17,521
No. 4 bar	20,489
No. 5 bar	19,807
No. 6 bar	18,199

Average, 19,030.5 pounds ultimate tensile strength.

These tests fully prove that it is possible to make a soft and at the same time an extra strong iron. This was made at the Hokendauqua furnaces of the Thomas Iron Company (No. 4 furnace) from the following mixtures of ore: Five-sixteenths New Jersey magnetite, one sixteenth Lehigh Company magnetite, one-sixteenth Port Henry magnetite, one-sixteenth Buttsville New Jersey semi-magnetite, four-sixteenths Lake Superior red hematite, four-sixteenths New York brown hematite. Fuel all coal, and the iron was of the following analysis: Silicon, 2.609 per cent.; phosphorus, 0.929 per cent.; manganese, 0.398 per cent.

Segregation in Steel.*

BY WALTER E. KOCH.

As regards segregation in open-hearth steel, away back in the '70's we were making high phosphorus steel rails; here is the analysis of one:

	At surface.	1 inch from surface.
Carbon	0.13	0.15
Phosphorus	0.28	0.46
Sulphur	0.06	0.06
Manganese	0.60	0.62

In steel plates I have found similar conditions. Here is one that cracked after being built into a boiler about the year 1880:

Carbon varied from	0.07 to 0.13
Sulphur varied from	0 08 to 0.150
Phosphorus varied from	0.04 to 0.06
Manganese varied from	0.60 to 0.68

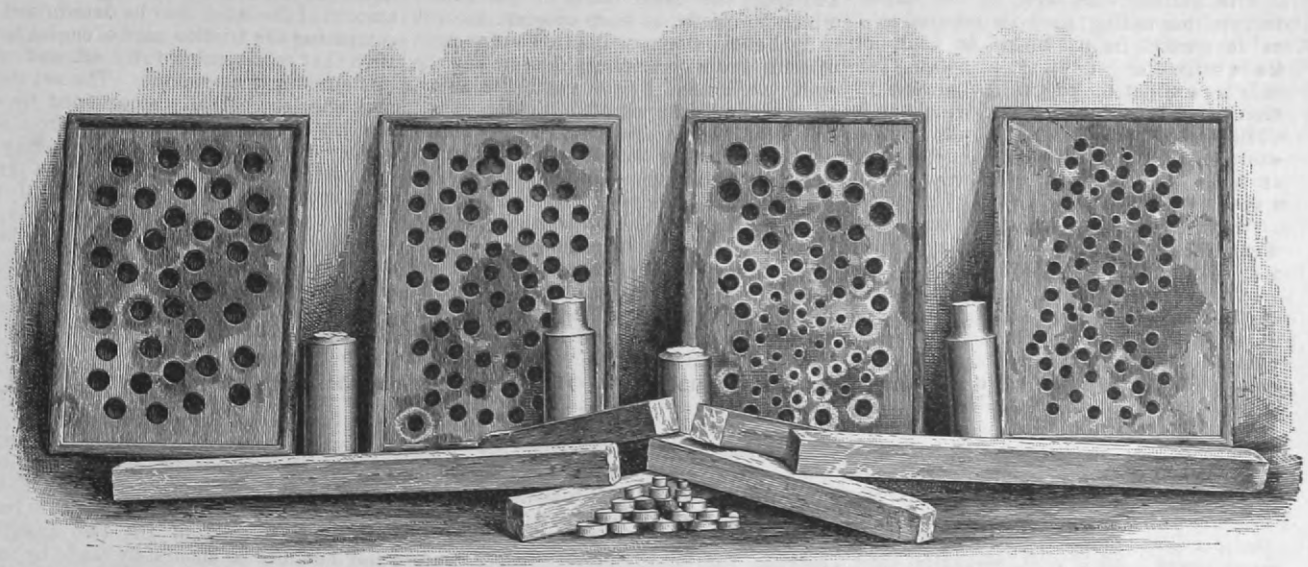
This plate was rolled from a slab hammered out of an ingot about 18 inches thick. This led me to make a great many experiments, with the following results: that in plates rolled from large ingots, I found a distinct segregation of phosphorus, sulphur and carbon at the center of the plate. I obtained my samples from the pieces cut out of the plates for manholes. The variation both in chemical analysis and physical properties was very great, especially in plates over 1 inch in thickness. In one case, that of a boiler plate 1½ inches thick, a piece cut from the center would not bend at all, but was quite brittle—this plate was rolled from a slab 8 inches thick, hammered down from a 20-inch ingot. In another case a plate showing 0.15 per cent carbon and 0.045 per cent. phosphorus on the edge gave 0 22 per cent. carbon and 0.07 per cent. phosphorus in the center, and a piece cut from the center would not bend but broke.

I have analyzed steel which has "bled" from large castings and ingots stripped too soon and found ample proof of segregation of carbon, phosphorus and sulphur. It seems to me that carbon is about the most shifty of all. I have found 0.40 and 0.58 per cent. carbon in the same rail and 0.55 and 0.75 per cent. carbon in the same tire—and, as every one knows, it is liable to vary widely in the same ingot, especially the larger ones, say over 3000 pounds in weight.

The moral of all this is—dead melt your steel, and pour as cold as you dare, and keep your ingots as small as you can. I think a great deal of this trouble is due to the irregularity of the modern pig iron. In the old slow-working blast furnace we used to get our iron regular in silicon, graphitic and combined carbon, and we could work it in the steel furnace to such a nicety that every charge would require the same amount of ore, &c., to yield the same grade of steel. Now we hardly ever get two heats to work alike. Pig iron from the same carload will require different treatment, the pig iron is not properly graded at the blast furnace and the variations in silicon and combined carbon in the same cast cause a good deal of trouble to the melter. Quantity and quality rarely exist together.

Discussion.

T. M. Hopké, in the discussion, said: I am inclined to take a rather different view from Mr. Koch. I do not quite see why it should be due to the pig metal only, but rather to conditions under which the steel is cast. I fully agree that the silicon differs very largely in the same cast of pig metal, but trouble from that source will be entirely eliminated in the open-hearth furnace. We have come across segregation from time to time; we always found that segregation takes place in the center of the ingot, as Mr. Koch says, but more especially at the top of the ingot, and my idea of it is (it is entirely my own idea) that the elements that are usually found in steel, carbon, manganese, silicon, sulphur and phosphorus, although chemically combined with the iron, form carbides, phosphides, &c. (manganese being alloyed with the iron). These carbides, phosphides, &c., are then disseminated throughout the mass of molten bath or ingot, as the case may be, I take it. And in the case of making large ingots, where segregation mostly occurs, the steel is often made a little bit hotter, and so takes so much longer to cool when cast in molds that these elements that are mechanically held in suspension gradually work to the top, owing to their lesser specific gravity; and then you will find that carbon, manganese, silicon and sulphur collect together in the top of the ingot, and are strung along the center of it, so that the exterior will have less than the interior, and in the top you will find the most. That has been my experience. One of the first things I was taught about phosphorus was that, of all



TESTS OF No. 1X THOMAS FOUNDRY PIG IRON.

* Read before the Engineers' Society of Western Pennsylvania.

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the elements usually found in steel, phosphorus was the most evenly distributed; but my ideas were very quickly changed, as experience taught me differently. I find that it is distributed very irregularly.

Mr. Koch: A most extraordinary thing happened the other day, the first time I have met with it since I made the first heat in an open-hearth furnace. A little tail or knob was left on the bottom of a small ingot, 18 x 7 inches, and weighing 600 pounds. The ingot was cast on Monday, and lay around till Thursday, and it was then dead cold. I told the boss at the furnace to knock that tail off, because it would develop into a thin plate. So he took a hammer and struck it a blow; it flew off with a loud report like a gun, and out shot a jet of blue flame. The boys all ran away, thinking it would explode. That blue flame had a yellow top to it, and as it burned it became yellower and shorter, finally going out. It burned for half a minute or so, and there was a little cavity at the back of the ingot where the tail had been knocked off.

Mr. Hopké: I might add one thing, bearing on the question of segregation. We have had from time to time so much trouble in getting uniform results in the laboratory, that finally I adopted this plan: We always cast a small test ingot, 3 x 3 inches in section and 12 inches long; that ingot is then rolled into a 1-inch bar, and a piece of this is taken to the drill press and drillings taken for analysis; and I have instructed the boys always to drill in about ⅛ inch in order to get well away from the surface, and then take the drillings from the interior for analysis; to get good clean drillings, and do the same thing always, so as to have everything done exactly alike every time, or, in other words, always maintain uniform conditions in taking sample for analysis.

Treasury Decisions.

Drawback on Iron Rivets.

SIR: On the exportation of iron rivets manufactured by the Diamond State Iron Company of Wilmington, Del., from imported wire rods, a drawback will be allowed equal in amount to the duty paid on the wire rods used in the manufacture, less the legal deduction of 1 per cent. The quantity of the imported material so used shall be determined by adding to the net weight of the exported rivets 5 per cent. of such weight.

Respectfully yours,
O. L. SPAULDING, Acting Secretary.
COLLECTOR OF CUSTOMS, Philadelphia.

Duty on Copper and Lead in Silver Ores.

SIR: The Department is in receipt of your communication of February 11, transmitting a letter from the Selby Smelting & Lead Company, in which they request that the existing practice in assessing duty on copper and lead contained in silver ores be so modified as not to take cognizance of any less proportion of copper or lead than 5 per cent.

It is represented that the general rule of the trade is not to charge for the value of these metals found in silver ore below the above-specified proportion, and that, as a consequence, no duty should be assessed thereon.

In reply, you are informed that the Department find no good reason for modifying the opinion expressed in its letters to yourself (5775*f*) and to the Collector of Customs at Nogales, Ariz. (9991*f*), dated July 8, 1891, and January 29, 1892, respectively, which was to the effect that 2 per cent. or more of copper and any quantity of lead found in a silver ore are dutiable under the provisions of paragraphs 133 and 191 of the act of October 1, 1890.

The request is therefore necessarily denied. Respectfully yours,

O. L. SPAULDING, Ass't Secretary.
COLLECTOR OF CUSTOMS, San Francisco, Cal.

Dutiable Weight of Pig Lead.

Before the United States General appraisers at New York, February 6, 1893. In the matter of the protests, 16,578*b* and 16,737*b*-2, of Balbach Smelting & Refining Company, against the decision of the Collector of Customs at Newark, N. J., as to the rate and amount of duties chargeable on certain pigs of lead, imported per "City of Alexandria" and "Yumuri," August 17, 1892. Opinion by Wilkinson, General Appraiser.

The merchandise consists of pigs of lead. The appellants state: "We protest on the ground that pig lead imported into this country only pays 2 cents a pound and that the tariff provides that only lead, if same is chief weight in base bullion, shall pay this rate, while in the above instance we are required to pay for the non-dutiable contents, such as gold, silver, &c."

The claim is that duty should be assessed only on the actual amount of lead in the bullion and not on the gross weight of the pigs. In support of this view the importers cite Department circular of January 8, 1891, which prescribes certain regulations under section 24, act October 1, 1890, for smelting and refining imported ores and crude metals in bond.

The special design of section 24 appears to be to enable ores and metals intended for exportation to be smelted and refined without payment of duties, although the section provides that the product may be withdrawn from bonded warehouse for domestic consumption upon payment of duties and under such regulations as the Secretary of the Treasury may prescribe.

It does not, however, appear necessary in the present case to inquire into the regulations prescribed by the Department. We find that the merchandise is commercially known as pig lead or lead in pigs. Paragraph 200, N. T., provides a duty of 2 cents a pound for lead in pigs, and we hold that duty was correctly assessed at 2 cents a pound upon the gross weight of the merchandise.

"Rivets" not Free as Material for Construction of Vessels to be engaged in the Foreign Trade.

SIR: The Department is in receipt of your letter of the 10th ult. relative to the question presented by George B. Douglass, whether "rivets" imported for use in the construction of vessels, to be engaged in foreign trade, may be imported under the provisions of section 8 of the act of October 1, 1890.

It appears that although rivets are not specifically enumerated among the articles provided for in the statute, your office is of opinion that they may fairly be deemed to be embraced by said section, for the reason that they are designed for the same general use, and are composed of the same material as "iron and steel rods, bars, spikes, nails and bolts," so provided for, and are distinguished therefrom only in form.

The material clause of the statute referred to is worded as follows:

That all lumber, timber, hemp, manilla, wire rope, and iron and steel rods, bars, spikes, nails, plates, tees, angles, beams and bolts, and copper and composition metal which may be necessary for the construction and equipment of vessels built in the United States for foreign account and ownership or for the purpose of being employed in the foreign trade, including the trade between the Atlantic and Pacific ports of the United States, after the passage of this act, may be imported in bond, under such regulations as the Secretary of the Treasury may prescribe; and upon proof that such materials have been used for such purpose, no duties shall be paid thereon.

In view of the precise enumeration in the statute of the materials and articles allowed to be imported in bond for the purpose mentioned, the regulations prescribed thereunder by the Secretary of the Treasury are strictly confined to the materials and articles comprised in such enumeration *eo nomine*, and the Department finds no authority for extending the privilege of said law to any other materials or articles on the ground of their similarity to those so designated.

Please advise Mr. Douglass accordingly. It is hardly necessary to state that the designation of "rivets" by the name of "bolts," for the purpose of bringing them within the purview of said section 8, is correctly held by you to be inadmissible. Respectfully yours,

O. L. SPAULDING, Ass't Secretary.
COLLECTOR OF CUSTOMS, New York.

Value, Dutiable, Inland Charges on Turkish Ore. Duress. Additions to Entered Value Under, What Constitutes

Before the United States General Appraisers at New York, March 8, 1893. In the matter of the protests, 15,670*b*, 15,671*b*, and 15,672*b*, of Baltimore Chrome Works (2) and F. H. Shallus (1), against the decision of the Collector of Customs at Baltimore, as to the rate and amount of duties chargeable on certain charges on chrome ore, imported per "Horn Head," "Alcesta," and "Washington," November 17 and October 8, 1891, and January 6, 1892. Opinion by Sharretts, General Appraiser.

We find as facts in this case that the Baltimore Chrome Works purchased and imported into the port of Baltimore three cargoes of chrome ore from Turkey. At the time of making the entry thereof the appellants added to the *per se* value of the ore the cost of transporting the same from the mines in the interior of Syria to Ourmelia, a shipping point on the Sea of Marmora. In addition to these transportation charges, the appellants also added a sum equal to a tax imposed by Turkey on ore mined in and exported from that country. The protest raises no question as to the action of the Collector in assessing duty on the amount of the tax so added, and we cannot go outside of the protest to consider this point. The evidence before the board shows that the point of shipment is not a principal market in Turkey for the sale of chrome ore, but is simply a place where such ore is brought for the purpose of exportation. In such a contingency, the point of production, or the mining district, becomes the place where we must go to establish the dutiable value of the merchandise.

Upon appeal to reappraisement with regard to the market value of the chrome ore per "Horn Head," one of the cargoes now under consideration, a general appraiser, and subsequently a board of three general appraisers, found the market value thereof to be the invoice value at the mines. Had the appellants made entry in this amount the reappraisement of the merchandise would have been final and conclusive against the Government, but inland transportation charges having been added on entry to the invoice value of the ore, we must consider if the appellant is not bound by his entry. Section 7, act of June 10, 1890, provides that "duty shall not, however, be assessed upon less than the invoice or entered value." This provision of the statute is operative, however, only against a voluntary entry. The issue in the case at bar, then, is: Was the entry made voluntarily or was it made under duress? The testimony on this point is conflicting. It tends to show, however, that Mr. Burke, the broker employed by the importers to pass the merchandise through the custom house, was not quite sure whether the dutiable value of the ore was at the mines, or at the wharf where the exporting vessel lay. The interests of his clients demanded that he should not enter an amount in excess of that properly chargeable with duty, nor

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should he undervalue the merchandise by deducting on entry transportation charges if they were dutiable, thus subjecting his clients to additionable duty amounting to over $60,000, on the three cargoes. That Mr. Burke did not voluntarily come forward and add the transportation charges to make market value of the merchandise is shown by the fact that he took two days to complete the entry, in the mean time trying unsuccessfully to induce the customs authorities to admit that the said transportation charges were not dutiable. The deputy collector and clerk at the entry department of the custom house informed Mr. Burke that they considered the transportation charges dutiable, and by inference, if not in express words, gave him to understand that duty would be exacted on said transportation charges. The information imparted to Mr. Burke during office hours by the customs officers clothed with authority to speak left him no safe course other than to protect his employers against the exaction of an enormous penalty by adding the transportation charges to the invoice value of the ore on entry, which he did in the following form:

Cost of inland transportation to place of shipment added to above market value to make what is claimed to be dutiable value, but which we claim is not a dutiable charge and should not be added.

Section 7 of the act of June 10, 1890, under which the addition was made, provides that—

The owner, consignee or agent of any imported merchandise, which has been actually purchased, may at the time when he shall make and verify his written entry of such merchandise, but not afterward, make such addition to the entry to the cost or value given in the invoice . . . as in his opinion may raise the same to the actual market value or wholesale price of such merchandise at the time of exportation to the United States in the principal markets of the country from which the same has been imported.

The indorsement on the entry was not a voluntary addition to make, in the importer's opinion, actual market value. The addition was made under protest. The deputy collector, in his testimony, said he permitted the importer to make addition on entry in the form hereinbefore stated in order that, if the transportation charges were subsequently held to be not dutiable, the importer could have relief.

It would seem to us that the official statement of the customs officers that the transportation charges were dutiable was equivalent to a demand on the part of the collector that the importer must pay duty on said charges, and that the importers added them on entry under duress.

It suffices if the payment is caused on the one part by an illegal demand and made on the other part reluctantly.

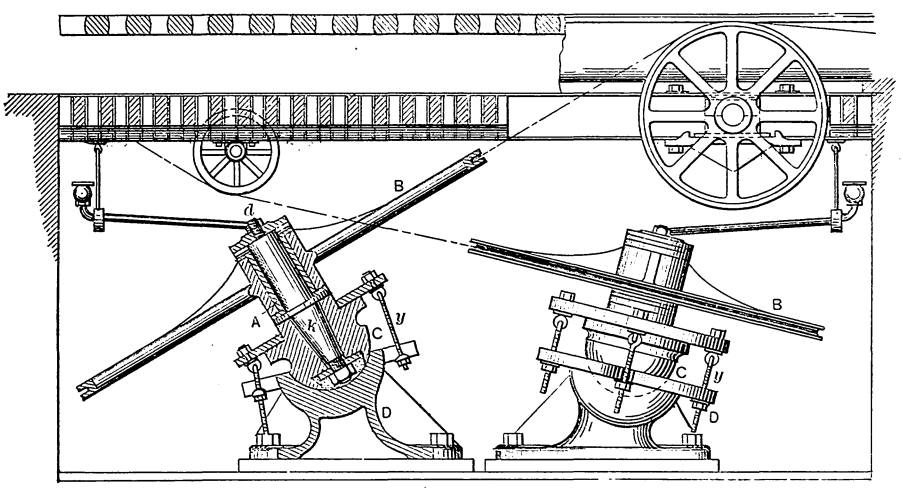
He was unwilling to pay either the excess of duties or penalty, and must be considered, therefore, as forced into one or the other by the collector *colore officii*. (Maxwell *v.* Griswold, 10 How U. S. Court Reports, 255.)

When such duress is exerted under circumstances sufficient to influence the apprehension and conduct of a prudent business man, payment of money wrongfully induced thereby ought not to be regarded as voluntary. When the duress has been exerted by one clothed with official authority or exercising a public employment, less evidence of compulsion or pressure is required. (Robertson *v.* Frank Bros. Co., 132 U. S., 22, 23.)

In the present case, we hold that the entries of the chrome ore by the "Alcesta," "Horn Head," and bark "Washington" were made under duress, and that said entries are not binding upon the appellants. The protests lodged against the assessment of duty on transportation charges from the mines to the exporting vessel are well founded, and the same are sustained. The Collector's decision is reversed, and he is authorized to reliquidate the entries in accordance with this decision.

Adjustable Sheave Support.

Although this sheave support may be generally applied it is here shown adapted to cable-railway machinery and located in a vault for the purpose of supporting the sheave used to direct the cable from the power drum to the cable conduit in a roadway. On the upper end of the shaft A is a journal supporting the sheave B which is secured upon the shaft by a disk through which extends a bolt from the shaft and a nut, *d*. The journal is surrounded by a sleeve bearing of phosphor bronze, and at the lower end of the bushing is an annular bearing plate of the same material, which is interposed between the lower end of the hub of the sheave and the collar on the shaft supporting the sheave. A similar plate is placed at the upper end of the hub, these plates taking the wear of the revolving sheave.



ADJUSTABLE SHEAVE SUPPORT.

The lower portion *k* of the shaft is tapered and supported in a semi-spherical bearing, C, which is formed with a central conical base to receive the tapered section of the shaft which is secured in the base by the screw bolt and nut shown. At the upper end of the bearing C is a clamping plate provided with eye bolts.

In the base D is found a semi-spherical cavity corresponding in contour with the outside surface of the bearing C, and having holes for the reception of eye bolts *y*, which join the eye bolts in the clamping plate carried by the bearing C. To set the sheave B at the angle of inclination required to give the proper lead to the cable, the bolts *y* are loosened by unscrewing the nuts and the sheave adjusted on the bearing C and its base D until it has assumed the proper position, when the bolts are again tightened by drawing up the nuts and the bearing C secured, which will hold the shaft A and the sheave in fixed relation to the cable drum and the sheave in the cable conduit in the road bed.

This sheave support is the invention of B. W. Grist, general manager of the Pennsylvania Iron Works Company of Philadelphia.

Progress at Depew.

Buffalo's new manufacturing suburb, Depew, is progressing rapidly. The New York Central shops are getting in shape. The buildings cover 13 acres and are of brick, with iron-trussed roofs. Their cost up to date, with the machinery which has been placed in them, is over $600,000. The shops consist of one large central building, in which are the blacksmith and machine shops, with two wings, stretching toward the north, which are designed for the construction and repair of locomotives. In each of the wings is a 60-ton hoisting crane, which is operated by electricity and is capable of picking up a locomotive and carrying it from one end of the building to the other. In the yard, between the two wings, there is an electric transfer table, which operates on the same system as trolley cars and which transfers locomotives from one track to another. The machinery of the shops is nearly all new and of the latest pattern. There is a large separate building for the boiler shop and a large two-story structure for offices. It is the intention of the railroad to concentrate all their locomotive building operations at Depew.

South of the Central shops, on a 38-acre tract, the plant of the Union Car Company has been commenced. This plant will comprise about 20 buildings and will have a capacity at the outset of 25 cars a day, which will afterward be increased to 50. They will make their own car wheels and possibly axles. Their capital is $400,000.

Further south is the plant of the Gould Coupler Works, which is rapidly nearing completion. Among the buildings are the foundry, which is 800 feet long, the fitting room, engine and boiler rooms, tumbling room and annealing room. The plant will be completed and in operation within a few months.

The factories of the National Car Wheel Works and the Buffalo Brass Works are already completed and in operation. The brass company manufacture car wheel journals and are now employing about 50 men. The car wheel company have about the same number. It is expected that both plants will be enlarged as soon as they are better established. The Vose Car Spring Company will probably soon locate at Depew.

Two steel twin-screw ferry boats, built by the Harlan & Hollingsworth Company for the Central Railroad of New Jersey, are named the "Mauch-Chunk" and "Eastern," and will begin service in a few days. The dimensions are 158 feet long, 32 feet molded beam and 54 feet beam over guards; depth of hold, 14½ feet, with 9 feet draft. Plates are made of steel and frames of iron. The motive power consists of two 7-foot propeller wheels driven by two compound engines, arranged one forward of the other and working on a continuous shaft, cranks being placed at right angles. There are two steel boilers, each 19 feet long and 8 feet in diameter.

The continued low rates of freight to Central American and Mexican ports encourage a rapid development of trade. San Francisco has already profited largely.

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Signaling by Electric Balloons.

Aerial signaling for the prompt transmission of messages over spaces unconnected by the telegraph, or in the hands of enemies, is a subject which has for some time received considerable attention at the hands of scientific men throughout the world. Several systems have been tried for this purpose, and various methods are now in use, including signaling by flash lights projected on the clouds by rockets and by means of captive balloons. Each of these methods leaves something to be desired, although effective in their way. The flash-light system is found to be a precarious one, since suitable clouds for a back ground cannot be provided at will; rockets are a somewhat cumbrous and lengthy means of communication. Balloons have, on the whole, been found the most effective. But those hitherto used have contained men to operate the signals, and the danger of trusting human life to a balloon, especially in stormy weather, is a grave drawback to balloon signaling on this principle.

A modification of the balloon system has, however, been lately brought out, which obviates the employment of men in the balloon, and promises to admirably fill the conditions required. The system is the invention of Eric Stuart Bruce of England, and it was first tried some years ago with moderate success at Chatham, England. Later on, after improvements, successful experiments were carried out at Antwerp, in consequence of which the Bruce system was adopted by the Belgian Government. Last year further trials were made in England, which yielded very satisfactory results, demonstrating that the balloons can be used effectively in very rough weather without damage to their contents. The balloons, as used by Mr. Bruce, are made of thin cambric, varnished, which admits of the electric lamps being well seen through it. The size recommended by the inventor as best adapted for use in land operations, is a balloon of 20 feet diameter, containing 4200 cubic feet of gas. A smaller one might be used at sea. The lamps, which can be placed in any number required, are held in a frame of ladder form in the center of the balloon, the position which has been found to be the most secure. The electric cable for signaling purposes can be made so as to weigh less than 30 pounds per 1000 feet. Storage batteries are used for the source of electric power.

Mr. Bruce lately read a paper on the subject of his balloon before the United Service Institution in London, in the course of which he exhibited the action and safety of the electric light when inside the balloon. He demonstrated the behavior of an incandescent lamp when broken in the center of a mass of tow, the lamp going out without firing the substance, owing to the instant destruction of the filament of carbon. He also proved that the chances of a balloon being hit by a bullet are very small, owing to the difficulty of judging its hight and distance. A further feature of recommendation in the electric signaling balloon is that less gas is required—namely, about 4000 cubic feet, as against 10,000 cubic feet usually supplied to balloons intended to convey human beings. The electric light balloon is moreover lighter and less liable to break away from its moorings in rough weather. Intercommunication between ships at sea, and between ship and shore could also be facilitated by the employment of electric balloons for signaling. The utility and value of Mr. Bruce's system appear to be considerable, and it seems likely that his method may be extensively used for military and maritime purposes.

The new steamer "Campania," built for the Cunard Company, at her trial trip on the Clyde on Saturday attained a maximum speed of 23.50 knots, or fully 27 miles an hour. This is the greatest speed developed by any steamship, and justifies the hope that she will be able to make the run from Fastnet to Sandy Hook in five days and a half.

Bilge Strainers and Grease Extractors for Sea-Going Ships.

There is nothing more important on board ship than that the pumps which are connected for pumping out water from the bilges should be at all times in perfectly serviceable condition. The very salvation of the ship itself depends frequently on this, and an inability to operate these auxiliaries promptly converts what might be called an ordinary leak into the gravest danger. The cause, however, for the failure of bilge pumps to properly function at times of emergency is not usually due to any fault in the condition of the pump itself, but in the clogging up of the suction pipes through which they draw the water from below. When the leak is sudden and considerable in size, there may be but little time in which to disconnect or overhaul these pipes, and a provision in the nature of a strainer is always arranged, whereby all particles of such a size as would choke them, or interfere with the operation of the pump, are prevented from entering.

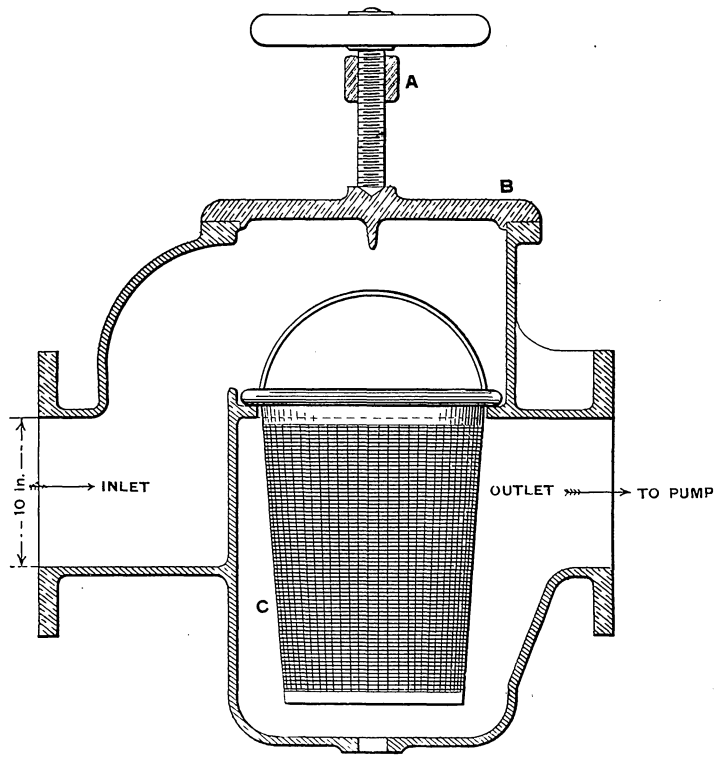


Fig. 1—Vertical Section.

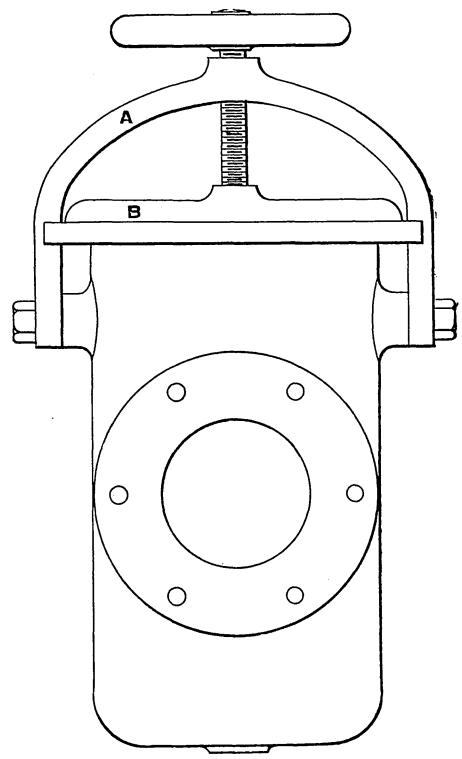


Fig. 2.—End Elevation.

BILGE STRAINER FOR SEA-GOING SHIPS.

The commonest form of such a strainer is simply a metal box, perforated with a great number of small holes, and placed in the lowest parts of the bilge, having the suction pipe leading into it. The manifest disadvantages of such an affair are that, should the inrush of water be great, these boxes would soon be so deeply covered that it would require the services of a diver to keep them clear. There have been cases where this very diving feat has had to be performed for many hours, and at very frequent intervals, in order to prevent ships from actually foundering from the effects of a leak which should have been well within the capacity of the pumps.

A great improvement therefore over the box strainer was needed, and the form shown in Figs. 1 and 2 is what is now considered about the best device for this purpose. It is a modified form of the invention of Chief Engineer Macomb of the United States Navy of quite a number

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of years ago, and thoroughly obviates all the difficulties alluded to. Its operation needs no explanation, as it is so simple as to be at once understood. It is always placed in the suction pipe at a considerable hight from the ship's bottom, so that even if there are several feet of water in the hold, the foreign matter can be readily removed, as it is only necessary to throw back the clamp A and lift off the lid B when the wire basket C, with its load of accumulation of chips, coal or other dirt, can be pulled out and a clean basket substituted in a moment. The simplicity of the arrangement is its best feature, and it has become one of the absolutely essential attachments to all the bilge pumps placed on board the war ships of the United States.

Grease Extractor.

Another very important separating function is always carried on in the engine department of long cruising ships, which, while not bearing the same relation to the vessel's safety as does the bilge strainer, still holds a most intimate relation to the production of full power, and hence indirectly becomes at times a matter of vital moment. This is the extraction of the grease from the water fed to the boilers, and thus preventing these primary parts of the machinery from becoming fouled and coated by a film which would greatly impair their efficiency as well as be a serious cause for their rapid deterioration.

Figs. 3 and 4 represent what might be called the very latest and best form for the apparatus for this work. For a long time large tanks were used, with many compartments filled with sponges or other absorbing stuff with large surface, and the feed water, after being drawn from the condenser by the air pump, was thrown into these tanks, and drawn from thence by the feed pumps for the boilers. This arrangement took up a great deal of room, and besides that objection the sponges rapidly disintegrated and passed through in small pieces to the pumps, where they caused much trouble. The extractor shown here, however, is as compact as could be desired, and at the same time in point of efficiency is far ahead of any other heretofore used on board American vessels. A brief description of the device is as follows:

The extractor is preferably placed in the feed pipe between the feed pump and the tank, instead of between the pump and the boiler, as in the former case the pumps do not have to handle the greasy water; but both ways are in use. The valve C is double seated, so that the extractor can, when desired, be shut off and the water sent direct. The shell and all the parts are made of composition and as light as is consistent with safety. The head A is solid and has a hollow spindle, which at the other end is solid for a short distance, E, and has a thread turned on it for the "spider head" G. A sleeve or drum, B, fits over shoulders of these heads and is perforated with as many holes, ¼ inch, as can be drilled without weakening the sleeve too much. This sleeve is then covered with a layer of burlap, held securely in place by light bands (not shown), and the drum and heads are all held in position by the bonnets, as can be readily seen. The water passes through the valve C and surrounds the drum, through which it is drawn or forced into the interior of the drum and thence through the spider or open head G, to a valve which is connected on the nozzle D. Of course all the grease is left on the burlap, and when the latter becomes heavily coated the water is temporarily sent direct to the pump, while the drum is withdrawn and a new piece of burlap, all ready to slip on, is adjusted. The time consumed by this operation is insignificant, and the amount of greasy water sent to the boiler but trifling. The socket for the end of the spindle in the bonnet F is squared to fit that end, and serves as a means of turning the entire drum half round by simply removing the stud bolts from that bonnet and turning it; the bolts are fitted for this purpose and the operation is performed when the burlap first gives signs of some clogging and before it is necessary to change it. The principal dimensions are given on the drawing, from which it may be seen in what a small compass it is included, even for as large a feed pipe as is required for the biggest ships.

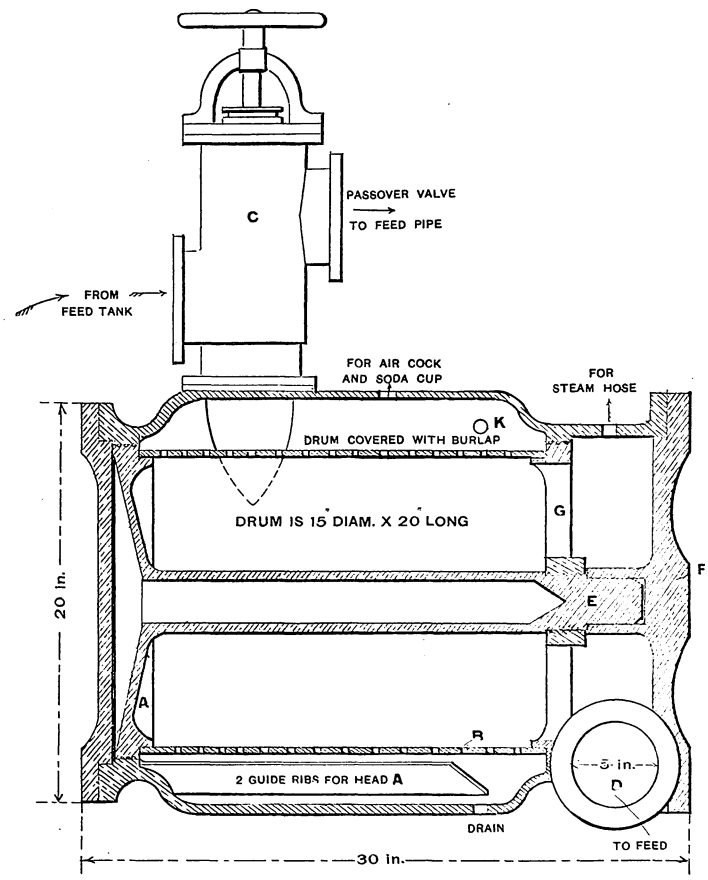


Fig. 3.—Vertical Section.

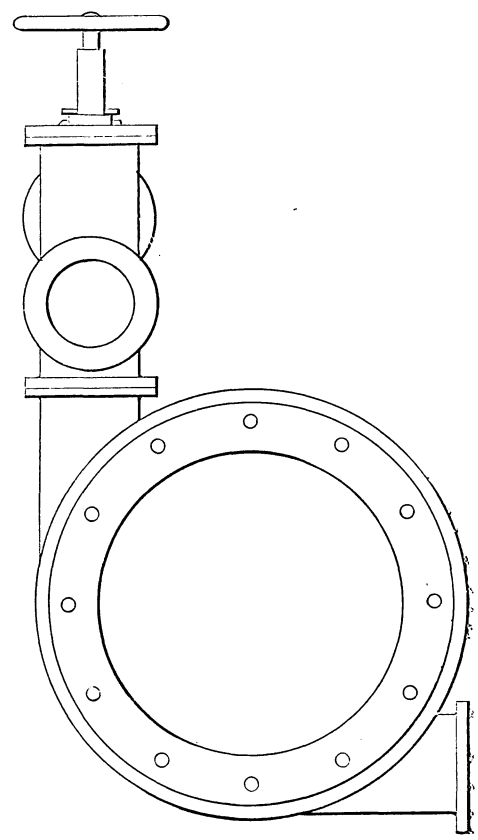


Fig. 4.—End Elevation.

GREASE EXTRACTOR FOR SEA-GOING SHIPS.

London exchanges mention the decease of a well-known foreman engineer of that city at the ripe age of 83. His name was Robert Bunting, and his honorable record shows that he was continually in the employ of the same firm of engineers to which he was apprenticed at the age of 14, until the day of his death, instancing an extraordinarily long working life of 69 years, spent in connection with one concern, that of James Simpson & Co. of Grosvenor Road, Pimlico, London. His work for the past 50 years was that of foreman of the works in connection with the palaces, public buildings, parks, &c., of the metropolis, which his employers undertook under the Government office of Works. In this service he was often brought into contact with the Queen and British Royal family, by whom, as well as by all who knew him, he was much respected. The activity of his life is said to have given him an immunity from all ordinary ailments.

The new Brooklyn Bridge trustees have adopted the old plans for the improvement of the New York terminal, and will invite proposals.

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THE WEEK.

In order to encourage the shipbuilding industry in France it has been decided that the government bounty on ships constructed in the country shall be increased, while the half bounty hitherto given for those purchased from abroad shall be withdrawn. It is thought, however, that this course will not greatly benefit French builders, as even when deprived of their half bounty it will pay to send orders for vessels to Glasgow or other British ports, the cost being so much below that asked by home shipbuilding firms.

Lloyd's latest returns show the total number of vessels in the British mercantile marine to be 21,542, having an aggregate tonnage of 12,203,761 tons. Of this number 7960 are steamers with 8,980,203 gross tons, or an average of considerably over 1000 tons each. In 1892 England added 872 vessels of 984,670 tons to her merchant service.

Northern capitalists are dredging a canal from the central to the southern part of lower Florida, to be navigable by steamers. When complete the waterway will extend from Jacksonville to Lake Worth.

The Montreal *Gazette* examines critically the statistics of trade between Canada and the United States, and endeavors to show that at present the balance of trade in farm products is decidedly in favor of Canada, but suggests that if the administration at Washington desire to encourage larger commercial intercourse the Dominion Government would not be slow to reciprocate.

Boston papers profess to have information that the Reading Railroad, under its new management, will sever relations with the Poughkeepsie Bridge and distribute its coal patronage as formerly, between several Eastern routes. The New England railroads that were engaged in a freight-rate war have declared a truce.

The California fruit crop promises a yield equal to $25,000,000. The wheat crop is calculated at 1,250,000 tons. It is already "heading out" in some places.

The Hawaiian sugar industry in 1891 produced 150,000 tons, and the trade of San Francisco, which comprised nearly all the sugar, exceeded $16,000,000 in value.

"It is quite evident," says the New Orleans *Times-Democrat*, "that a complete revival from financial depression and stagnation can best be brought about by the growth of manufactures."

Men in search of employment are warned not to go to Australia. One account states that the labor bureaus of the trade organizations of Melbourne contain names of 14,000 applicants for work, which does not represent half the unemployed, which is over 30,000. In Victoria there are 50,000 unemployed.

Cotton and corn are a failure in a large part of Mexico this year on account of protracted drought.

Rumors that "Cuban patriots" are starting simultaneously from New York, Key West and Mexico to overthrow Spanish authority on the island seems to have little basis in fact.

The first steamer through the Straits of Mackinaw this season passed April 17.

Reciprocity treaties with Cuba and Porto Rico do not prove to be satisfactory in their practical application to mercantile transactions, and intimations come from Washington that they are liable to be terminated. The local officials in the islands, so it is reported, insist upon the collection of a practically prohibitive duty upon articles entitled to admission free of duty under the terms of the convention. Some complaint is also made of Brazil in this direction.

The efforts of the canal boatmen to induce the Legislature to provide two floating grain elevators at Buffalo proved futile.

The appropriations made by the New York Legislature during the recent session amounted to $18,000,000, and included $258,000 for the canals, $211,500 for the purchase of Fire Island, $114,000 for six State armories, and $58,500 for the State Industrial School.

The red iron tower that has been a conspicuous landmark at Sheepshead Bay was tilted over by jack screws and will be sold as scrap iron.

The British Ambassador at Constantinople advises manufacturers of goods for export to Mohammedan countries not to use trade-marks which may be liable to wound Moslem susceptibility. The custom house at Magador in Morocco has lately received an order from the Sultan not to admit certain cotton goods, cloths, boxes of matches, &c, bearing in Arabic characters the names of Mohammed, Hassan and Ali, these names being considered sacred.

There are now more than thirty direct and competing lines from Europe to the east coast of South and Central America and five to the west coast. There are but six American lines to the east coast, five of which are owned and operated by English companies, while on the west coast America is unrepresented in this line.

A combination of firms in the Russian petroleum trade has taken place which will control nearly the enire product, and an advance in prices is spoken of, last year's business having been done on an unprofitable basis. Refined oil at Bakoo was sold at 5 copecks, or less than half a cent per gallon.

Since the imposition of duties in the United States upon Venezuelan coffee the greater part of this staple has been exported direct to Hamburg, from which port a regular line of steamers has been established. In this respect retaliation is a failure.

The foreign commerce of Bermuda is every year becoming more exclusively American.

Under the general direction of the Department of Agriculture manufacturers are invited to co-operate in finding a wider foreign market for corn and meat products, and the export trade in tobacco will receive attention with a view to enlargement.

Speculation in our principal agricultural products is supposed to be mainly responsible for the derangement of foreign trade which makes possible the present large outflow of gold, threatening the stability of our currency system. Under a money pressure the prices of cotton, grain and pork products have declined, but speculation held up these prices artificially until the opportunity to sell on favorable terms was lost, foreign markets having been supplied meanwhile from other sources. At the same time foreign competition has been encouraged by the stimulus given to agricultural production in remote quarters of the globe. With their accumulated gold foreigners may now be able to control the prices of American products at the expense of the producers.

A dissatisfied English stockholder of alleged small resources proposed to reorganize the Nicaragua Canal Company, which he would have placed under the joint control of the United States and England. At a meeting of stockholders, which was held without a chairman or secretary, Smith M. Weed, who had been named as successor to Warner Miller, the president, pronounced the whole scheme chimerical.

The high prices paid for cotton seed at the oil mills have caused a scarcity of seed for planting purposes. A few years ago the seed was burnt as refuse.

The new annual Tax Rate bill in New York State fixes the rate at 2.24⅜. Last year the tax rate was 1.98.

New Orleans papers encourage the erection of cotton mills in that city, arguing that it is the greatest market in the world for the raw material, enjoys unrivaled shipping facilities for the export trade and would be able to undersell Lancashire in all foreign markets.

A statement prepared by the United States mint director shows that the total specie holdings of the United States treasury and the great banks in Europe are $2,483,000,000, of which about $1,533,000,000 are gold and $950,000,000 are silver.

The growth of the silk industry in the United States during the last decade has been very remarkable. From a report recently presented to the Government, we learn that not only the quantity and range of silk manufacture has increased in that period, but that it has led to the invention of much new machinery. The following figures show clearly the progress made:

	1880.	1890.
Value of silk goods manufactured.....	$34,519,723	$69,154,599
Capital invested.....	$19,125,300	$51,007,537
Number of establishments engaged in silk industry.....	382	472
Number of hands employed.....	31,337	50,913

Coal of excellent quality is said to have been found near Grand Lake, in Newfoundland. One trough containing several seams of coal, extends for 15 miles along the south shore of the lake. Newfoundland is now fifth on the list of copper exporting countries of the world. Silver and lead mining are also becoming important industries, and the asbestos mines on the west coast are said to be very promising.

There have been many theories put forward to account for the formation of petroleum. Mendelejeff considers it to be formed by the decomposition of a carbide of iron by steam, ferric oxide and a hydrocarbon being produced; Sokoloff, by a combination of carbon and hydrogen; Ross, by the reaction of sulphureted hydrogen and calcium carbonate; Daubrée, by the decomposition of vegetable matter. Now, says *The Engineer* of London, M. Engler is inclined to consider it produced by the decomposition of animal substances. It is possible to obtain petroleum by distilling animal matter under pressure.

An apparatus for cooling the condensing water for a 70 horse-power engine is described in *Le Genie Civil*. A tank was made 6 feet 3 inches by 3 feet 6 inches by 2 feet 4 inches. This was divided up by wooden partitions 4 inches apart. The warm water was delivered on the top edges of these partitions and trickled down them, while a strong current of air was driven upwards between the partitions from a fan 3 feet 11 inches in diameter. A vacuum of 27¼ inches to 28 inches of mercury was obtained. The air pressure was 2 inches of water and its velocity 21 feet per second. The evaporation was as nearly as possible equal to the amount of feed water.

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The Iron Age

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Sacrificing Bar-Iron Extras.

It seems but a short time since the Western iron trade was in a ferment over the issue of a new card by a very prominent company in which extras were cut in two. The action was vigorously denounced by competing manufacturers, all of whom had long been engaged in the same practice, but were not prepared to acknowledge it openly. The bar-iron trade has not been at any time since then in such a condition of vigor that the old rates could be restored. On the contrary, competition for business has grown keener, and of late further concessions have been made to good buyers which bid fair to eliminate the little profit still left on special sizes. Companies manufacturing the full list of merchant-bar sizes, including bands, are conspicuous in this new departure. Their quotations are graded according to the character of the specification, a special price being named on each size to correspond with the advance in extras on the bar-iron list. The practice is virtually the same as that which obtained so long in the cut-nail trade and was known as selling on the average above base sizes. This will account for some of the very low prices recently current which have made many believe that the bar-iron trade was much more seriously demoralized than the facts warranted.

The bar-iron card under these circumstances, which seem to present no immediate prospect of improvement, appears to be in very great need of revision. The base list is certainly by common usage more extended than is given in the card. Car specifications have long been sold at a flat price, notwithstanding their range over sizes carrying theoretically a tenth extra, and the custom of throwing in the one-tenth extras as the base price is growing more frequent in other lines of large consumption. The card in its present form is thus so greatly ignored that it has lost its usefulness. Jobbing houses are of course most benefited by it, as they can hold a large part of their trade to its exact schedule of rates, thus realizing the profit which they are entitled to obtain on handling small quantities. The card, however, is antiquated for the general trade, and should be replaced by one which more nearly approaches the conditions now governing transactions.

If such a card could be prepared by authorized representatives of the bar-iron manufacturers, it should also be made applicable to steel. At present there is no uniformity among those who sell iron-finished bar steel. A steel card is presumably in vogue, but manufacturers do not strictly adhere to it. Some quote it as their basis of prices with such concessions as they deem necessary to secure trade, others use the bar-iron card, but there are important concerns using a card of their own with radical differences. There are manufacturers of such steel who adhere rigidly to a certain classification of sizes taking base rates, while others make their terms more elastic and include sizes that generally carry something of an extra. The buyer may be somewhat confused by quotations on such a diversity of lists, but if he has the time to reduce them all to a common basis he finds that the net price asked does not vary materially among manufacturers of the same standing. As the trade know so thoroughly that prices cannot be advanced above their natural level by mere ingenuity in the draft of a card of extras, they might as well simplify this whole question by the adoption of one to be used indiscriminately for iron or steel.

The Copper Situation.

The negotiations now proceeding among the leading copper producers in the world to continue the understanding under which they have been working, again attract attention to the metal. On the whole, it may be stated that the arrangement has worked quite well, from the standpoint of the mines, since prices have maintained a level which may be pronounced quite remunerative to the large, well equipped mines.

So far as the statistics are available, it would seem as though the producers have been laboring under disadvantages which make the results of their efforts to favorably affect values seem surprisingly successful.

The statistics of production, of imports and of exports for the years 1891 and 1892 may be summarized as follows:

Copper Statistics.

	1891. Pounds.	1892. Pounds.
Production U. S.	284,119,764	341,904,976
Imports:		
Fine in ore and pyrites	11,690,312	8,277,063
Pigs, bars and ingots	3,154,557	1,552,515
Total	298,964,633	351,734,554
Exports:		
Ingots and bars	69,279,024	30,515,736
In ore and matte (estimated)	50,000,000	66,000,000
Re-exports of foreign:		
Fine in ore	2,082,708	707,739
Pig, bars, &c.	534,949	1,274,410
Total exports	121,896,681	98,497,885
Available supply exclusive of stocks	177,067,952	253,236,669

Unfortunately, complete statements of stocks are not obtainable because of the refusal of some of the largest companies to furnish the data.

The statements of stocks, when they profess to cover the whole country, are worse than useless, since they are based on guessing, and are dishonest because they are not accompanied by a frank statement relating to the methods of their compilation.

On the face of it, the statement of the available supply exclusive of stocks, printed above, appears very unfavorable to the producers, since it shows that in 1892 there was an increase of over 75,000,000 pounds over the preceding year. With such a growth in the quantity of copper to be sold in the domestic markets, the claims of the large producers that they have been bringing the supply within reasonable limits would seem absurd. Still, a closer examination puts a somewhat different aspect on the matter.

It was only in July that the international agreement went into effect. So far as the American mines are concerned, it really does not materially reduce the production of the individual mines, excepting a few. Practically, it only provides that they shall not greatly increase their capacity. No official data are available for the production of copper during the first half of 1892. Still, a close estimate shows that it amounted then to about 190,000,000 pounds, while the second half may be credited with 152,000,000 pounds. A very large part of this reduction in output is due to the closing down of the Anaconda for about three months. Since this mine is credited in the copper trade with having made an average of over 10,000,000 pounds per month in the first half of 1892, it is probably responsible for 25,000,000 pounds out of the 38,000,000 pounds reduction in production during the second half of 1892.

It will be readily appreciated that an enormous power lies in the hands of those who control the management of the great Montana property. The Tamarack-Boston-Montana group and the Calumet and Hecla group each represent about 75,000,000 pounds annually, so that, with the Anaconda, a total of about 200,000,000 pounds is reached as the capacity of the three leading interests. Friction among them is therefore likely to be very troublesome, and may lead to a return to the liveliest competition. In all this the one conspicuous fact must not be forgotten, that lake copper is not, as it was at one time, the controlling factor in the markets. Electrolytic metal has deeply cut into its territory.

The Crop of Failures.

Failures in the iron trade have been unpleasantly numerous this year. It is probable that even thus early in 1893 such financial reverses have exceeded the aggregate of the entire preceding five years. The depressions in business in that period were comparatively easily borne, and the matter was the subject of frequent congratulation on that account. We now see how much more severely recent conditions have affected manufacturers and merchants. The forcing of prices to a lower level than ever before attained, with their continuance for months at that low level, was bound to develop weak spots which could not be repaired except through a substantial recovery to better values. At such a time the seeds of trouble springing from inefficient management, insufficient capital, speculative investments or unnecessary expansion of plant must make themselves manifest in a crop of failures. There is no chance of their being hidden by large profits, which, like charity, cover a multitude of sins. The manufacturing or other commercial enterprises that can survive an era of depression such as this must necessarily be ably managed, well fortified financially and thoroughly braced to meet occasional shocks to credit or a growing lack of confidence by money lenders.

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The failures occurring cannot be attributed to the bad condition of a particular branch of the iron trade or to the special hardships borne in any one section of the country, for a variety of merchants and manufacturers and nearly all sections have been involved. New enterprises, presumably well equipped with the most approved appliances for economical production, and old concerns that have withstood financial storms for a generation have gone down in the same fashion. The North cannot say to the South that at last the day of reckoning has come for rash investors in an untried field, because the North itself has suffered very considerably. The trouble is general and not specific.

And yet there are some specific causes to which can be traced failures that should not have happened. Merchants have failed who have simply overreached themselves in emulating the methods of stronger houses. They have placed larger contracts for goods than their immediate trade warranted, so that they could get closer prices, disposing of the surplus stock thus acquired in more distant markets at absolute cost, taking chances on losses through bad accounts. Such a policy might be carried on safely for years, but not forever. A failure of this kind is not deplored by competitors. Some manufacturers have failed because they were unable for some reason to reduce costs below the selling price of their goods. If other manufacturers can effect such a reduction they should also be able to do so. Able management accounts mainly for this difference in favor of an establishment which succeeds while its competitor fails.

But, after all, the most conspicuous failures among manufacturers lately have been due to the difficulties which might be compared with a flank movement under fire. In one notable instance it was due largely to changing a concern which had grown in the once prosperous cut-nail trade to a large maker of steel and of structural and boiler plates. In the other it was the outgrowth of one of the boldest, and, in spite of the latest developments, one of the most far-sighted changes of base of a great works.

We still regard the shifting of the rail manufacture from Central Pennsylvania to tidewater as one of the most brilliant conceptions in the development of the American iron trade. The future will justify the wisdom of the step taken. Delays in getting the new plant into full operation and difficulties growing out of diverting the tonnage of the old works into new channels strained the resources of what was one of the strongest of American steel companies.

So far as is known now, the two allied great corporations suspended payment simply because they did not have the working capital for the greatly enlarged operations, and herein lies a general warning for many engaged in the industry. The rapid increases in plant and in tonnage, often the outgrowth, cumulatively, of minor changes, demand a corresponding increase in working capital.

As to the effects of the failures of the current year, and the last which has occurred, it is quite useless to deny that they are serious. When great concerns which have been believed to be in a position to weather any storm go into the hands of receivers, then the banks become exceptionally critical. For some time to come "iron paper" in all parts of the country will be subjected to the closest scrutiny, to the great inconvenience of many, and with positive danger to some who otherwise could be easily carried along.

A firm of contractors in the Pittsburgh Building Exchange sued a walking delegate for the Hod Carriers' Union for damages caused by ordering out their men on a strike two years ago. Judge Ewing's charge was a strong one for the plaintiffs. He said the law is that no man has a right to take away the servant of another. He has no right to dissuade a person from working for another. No right to induce a person to break a contract. He said that this seems to be an era of combinations, both of capital and labor, and while some are for the benefit of the community many, both of capital and labor, it is alleged, do illegal acts and are to the detriment of the public. As to the rights of workingmen, they have no right to stop work at a critical point in order to compel the employers to discharge men The verdict was 6¼ cents for the plaintiffs.

Hydraulic Power in London.

In *The Iron Age* of February 16, 1893, we quoted from a lecture by Prof. W. C. Unwin entitled "The Development and Transmission of Power from Central Stations." We are now enabled to supplement this by an article in the *Engineer* which gives a more detailed description of the plant and operations of the London Hydraulic Power Company. This company, with whom are associated the General Hydraulic Power Company, have been in existence for about nine years. The general company have the same objects as the London Company, but their operations are not confined to any particular city or area. They undertake the supply of hydraulic power, either in England or abroad, wherever a sufficient demand exists for a system of public supply and the general conditions are favorable.

The general principle involved is, as we have said, pumping water into mains laid in the streets, from which service pipes are carried into the houses to work lifts, or three cylinder motors when rotatory power is required. In one or two cases, however, a small Pelton wheel has been tried working under a pressure of over 700 pounds on the square inch. The efficiency is over 70 per cent.—an extraordinarily high duty. Over 55 miles of hydraulic mains are at present laid in London between Kensington and the London Docks (Shadwell Basin) on the north side, and between Westminster Bridge and the Surrey Docks on the south side of the river, thus embracing nearly the whole of the city, Westminster, Kensington, Wapping and Southwark. The mains are kept charged by pumping engines located at the Central Pumping Station, Falton Wharf, Blackfriars; at Millbank street, Westminster; and at Wapping. A fourth station is in progress in North London, close to the City Road basin. The reservoir of power consists of capacious accumulators, loaded to a pressure of 800 pounds per square inch, thus producing the same effect as if large supply tanks were placed at 1700 feet above the street level. The water is taken from the Thames or from wells, and all sediment is removed therefrom by filtration before it reaches the main engine pumps.

The power is available day and night and on Sundays all the year round at a pressure of over 700 pounds per square inch, a pressure which enables small machines to perform a large amount of work with a very small quantity of water.

At Kensington Court a special hydraulic supply to the houses there has been furnished by this company, in conjunction with the manufacturers, the Hydraulic Engineering Company of Chester. Each house built on the estate is furnished with an improved passenger ram lift on Ellington's system for domestic use. The lifts are so constructed that they can be worked with safety by even young children. The doors giving access to the lift cannot be opened until the car is at rest at the door to be opened, and the lift cannot be worked until the doors are closed.

The progress of the London Hydraulic Power Company is illustrated by the number of gallons of water power delivered and machines at work during—

	Gallons delivered per week.	Number of machines.
July, 1884.....	317,816	96
July, 1885.....	957,907	235
July, 1886.....	1,379,846	387
July, 1887.....	1,694,621	527
July, 1888.....	2,377,190	720
July, 1889.....	3,339,067	917
July, 1890.....	4,223,751	1,133
July, 1891.....	5,027,616	1,381
July, 1892.....	5,998,249	1,676

At the present time there are over 1750 machines at work, and the supply is about 6,500,000 gallons per week. Of the existing stations, that at Wapping is the most powerful and complete.

The water is obtained from a well sunk for the purpose. The level of the water is about 40 feet below the surface of the ground. This well is sunk to the level of the London clay. On the top of the clay is a bed of gravel about 8 feet thick, and the water is pumped out of the bed of gravel. The yield from the well is, when pumping continuously day and night, about 16,000 gallons per hour, and supplies about half the amount required at this station. The quantity required in addition to the yield of the well is taken from the London Dock through a syphon pipe which discharges into the well. The pipes in the well are so arranged that the hydraulic pumps will either draw from the gravel or from the dock. There is some reason to believe that the water in this gravel bed is neither more nor less than an underground steam flowing parallel to the Thames. A hydraulic pumping engine is fixed in this well, and raises the water to a tank on the top of the boiler house. This pump is driven by water from the pressure mains. The pump cylinder is fitted with a tubular plunger passing through packing at the mouth of the cylinder, and this main plunger itself forms a hydraulic cylinder, fitted with a stationary tubular plunger, through which the high-pressure water passes into and out of the interior of the main plunger. On each side of the main cylinder is a small cylinder; the two plungers of these are connected to a cross head attached to the main plunger. The small cylinders are always in connection with the high-pressure water supply, which acts on their plungers with sufficient force to cause the main plunger to make its back stroke. The stationary plunger is alternately put in communication with the high-pressure supply and with the discharge by means of a slide valve, which is moved to and fro by the hydraulic pressure acting alternately in a short cylinder at each end of it. The alteration of the pressure in these last mentioned cylinders is effected by the movement of a secondary slide valve, which is shifted by tappets on a rod attached to the main plunger. The speed with which the main slide valve moves is controlled by more or less throttling the passage from the secondary slide valve to its cylinders. The arrangement

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permits of a variation of the speed of travel of the main valve, and a pause of any desired length is obtained during reversal of the motion of the plunger. The main plungers are 20 inches diameter, 4-foot stroke, and work at a speed of 10 strokes per minute.

The water from the well is pumped into tanks over the boiler house. Here the water settles, and is then collected by floating pipes and passes through filters to the underground filtered water reservoirs. The main engine circulating pumps draw the water from the reservoirs and force it through the surface condensers into the filtered water section of the tanks over the boiler house. From these tanks the main engine pumps take their supply under the tank pressure, and force it into the hydraulic power mains. The total reservoir capacity at the station is 800,000 gallons, which is sufficient for one day's supply from the station. The plant for pumping and filling is designed with the intention that it should be at work day and night, while the main engines do not work as a rule more than 12 hours. During the night the hydraulic pumps in the well are worked from the power supplied from the central station, Falcon Wharf, Blackfriars. As a rule, therefore, the main engines start in the morning with all tanks full, and end their day's work with them half empty. These hydraulic pumps are not only economical themselves, but, as it will be seen, give greater facilities for working day and night, as they are quite independent of the supply plant at the particular station where they are fixed. The night watchman stops the pumps and filters when the tanks are full. That is all he has to do.

It is essential that the water used should be clean. The water obtained from the gravel leaves little to be desired in this respect, but that obtained from the docks is by no means pure, and elaborate precautions are taken to purify it. The storage tank extends over the whole boiler house and coal store. The tank is divided, and a certain amount of mud is deposited here. From thence, as we have said, it passes through the surface condenser of the engines, and it is turned into a set of filters, eight in number. The body of the filter is a cast iron cylinder, containing a layer of granular filtering material resting upon a false bottom; under this is the distributing arrangement, affording passage for the air, as described below; and under this the real bottom of the tank. The dirty water is supplied to the filters from an overhead tank into which it has been pumped, and is distributed to them by a pipe running the whole length of the building in which they are placed. After passing through the filters the clean effluent is run into a large tank, and is then again pumped into the clean water tank, from which the pumping engines derive their supply. The cleaning of the filters, which is done at intervals of 24 hours, is effected so thoroughly *in situ* that the filtering material never requires to be removed. The operation is as follows: Air is injected by a steam blower, through the distributing arrangement mentioned above, and at the same time a reverse current of water is passed through the filters; this causes the whole of the filtering material and the impurities contained in it to boil up, as it were. The most violent agitation takes place, and the particles of dirt are thoroughly loosened by the friction of the air and water, without damage to the grain of the filtering material; the dirty water passes through cylindrical screens in the filters themselves, which allow all the impurities to pass away to the drains, while preventing the loss of any of the filtering material. After a few minutes the effluent, which at first starting is like liquid mud, becomes clearer as the air and water do their work and regains the same tinge as the original sample to be filtered.

The water used for washing is the ordinary unfiltered water. As soon as the cleaning, which occupies but a very short time, has been affected, the filters are ready for work again. The total quantity which these eight filters are guaranteed to deal with is 35,000 gallons per hour. By suitable arrangement of pipes and valves, a minimum of labor is necessitated, only the opening and shutting of the valves being needed, no manual labor of any kind in the washing of the filters being required. The water is rendered so clean by this process that even if allowed to remain for many days in the tall test glasses which are employed for ascertaining its purity no deposit of any kind is to be found in the bottom, showing that all the mechanical impurities have been eliminated.

The engine house contains six sets of triple-expansion engines, constructed by the Hydraulic Engineering Company on Ellington's system. The cylinders are 15 inch, 22 inch, 36 inch x 24 inch. The cranks are set at 120°. Each cylinder drives a single plunger pump with a 5 inch ram, secured directly to the cross head, the connecting rod being double to clear the pump. The boiler pressure is 150 pounds on the square inch. Each pump will deliver 300 gallons of water per minute, under a pressure of 800 pounds to the square inch, the engines making about 61 revolutions per minute. This is a high velocity, considering the heavy pressure; but the valves work silently and without perceptible shock. All the cylinders are jacketed, and unusual care has been taken to keep them drained back into the boilers by gravitation. The drain pipes are large and carefully laid, to prevent any accumulation of water in the bends. The steam pipes are of wrought iron, laid upon the roundabout system. Every portion is practically in duplicate. All the steam pipes are trapped, and the condensed steam from the traps is collected in a tank and returned by feed pumps to the boilers. The utmost care has indeed been taken to prevent water finding its way into the cylinders. The engines, as a result, are found to be very economical, the consumption of steam being 14.1 pounds per horse per hour. The engines are fitted with surface condensers, as we have already stated. The casing of the condenser forms a part of the engine frame, and each set has its own independent air, circulating and feed pumps, driven from the cross head of the intermediate cylinder through links and rocking shaft, as in marine engines. The circulating water is taken, as already explained, from the filtered water reservoir below the station yard, and is delivered into the filtered water division of the boiler-house tank, from whence it is drawn by the main pumps and pumped into the hydraulic mains. The circulating pumps are of ample capacity to raise the necessary amount of suction water for their respective engines; they thus perform the double duty of circulating and lift pumps. The high-pressure cylinder is provided with Mayer expansion slides, and regulated by hand, by means of a wheel in the usual way, the range of cut-off being indicated on an engraved brass index plate. The cylinders are clothed with non-conducting composition, and covered with planished sheet steel, which is in every way an improvement on wood lagging. The engines are provided with a high-speed governor and throttle valve, and also with auxiliary starting valve.

The water delivered from the main pumps passes into the accumulators, which are among the largest constructed. The rams are 20 inches in diameter, and have a stroke of 23 feet. They are each loaded with 110 tons of slag, contained in a wrought-iron cylindrical box suspended from a cross head on the top of the ram. The area of each ram is 314 square inches, and the pressure being 800 pounds on the square inch, the total load is $314 \times 800 = 251,200$ pounds, or a little over 112 tons. Allowing 5 per cent. to overcome the friction of the packing, &c., we have 120 tons, the extra 10 tons being supplied by the weight of the ram and the casing. One of the accumulators is loaded a little more heavily than the other, so that they rise and fall successively; the more heavily loaded actuates a stop valve on the main steam pipe. If the engines supply more water than is wanted, the lighter of the two rams first rises as far as it can go, the other then ascends, and when it has nearly reached the top, shuts off steam and checks the supply of water automatically. Although one accumulator is always in advance of the other, the difference of load is so small that both move at the same time. The result is that the pressure is maintained in the mains with very great regularity.

Steam is supplied by six boilers fitted with economizers and mechanical stokers. The boilers throughout are of Siemens-Martin steel, and each one consists of a top and bottom vessel connected by steel blocks. The top vessel is 21 feet long and 4 feet 6 inches diameter, with flanged and dished ends. The bottom vessel is 18 feet long, 5 feet diameter, and is fitted with a flue, 3 feet 9 inches diameter. The flue is composed of welded and flanged rings, connected by a tube plate to a battery of 3 inch tubes at the back end. This flue is fastened to the front and back end plates by bolts, the joints being specially prepared. This enables the flues to be drawn out for inspection and cleaning. To facilitate the operation a rail is fixed to the shell, on which the pulleys attached to the flues run. A longitudinal dome or receiver is placed on the top of the boiler to insure perfectly dry steam. The boiler being so quick a steam raiser, this dome is advisable also, on occasion, to prevent priming.

The coal when delivered at the station is discharged by a 20 hundredweight hydraulic crane, which raises the coal in buckets from the lighter in the adjacent dock on to an elevated staging, from whence it is run in a truck to the coal store adjoining the fireroom. From the coal store it is taken as required in a hopper-bottom truck, which is raised by a hydraulic lift on to an elevated roadway over the fireroom and discharged into a conveyor hopper, from whence it is carried to the several stokers as required.

The boilers and economizers together have evaporated 11.1 pounds of water at 146 pounds pressure from the hot well temperature with 1 pound of Nixon's navigation coal. Combining the best results obtained on trial of the engines and boilers, the coal used per indicated horse-power works out at 1.27 pounds.

It will be readily understood that it is of the first importance that the mains in the public streets should be so constructed and laid as to be perfectly trustworthy and free from leakage. The velocity of water flowing from a free orifice with a pressure of 700 pounds per square inch being about 320 feet per second, a very small hole in a pipe may lead to a large escape of power. Every pipe and valve used throughout the system is tested to 2500 pounds per square inch before being placed on the ground and again tested to a reduced pressure in the trenches to insure the perfect tightness of the joints. The jointing material used is gutta percha, on the system introduced by Lord Armstrong many years ago, but the form of the flanges has been modified by Mr. Ellington so as to insure their being of even greater strength than the body of the pipe.

This is accomplished by locating the flange a short distance back from the end of the pipe and by facing the flanges of the two pipes with projecting bosses of

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some hight. This increases the depth of line along which fractures would otherwise take place, and the pipes are made as strong at the jointing as in any other part. Bolts through the flanges hold the pipes in place.

Practically, no failures of pipes have occurred since this improvement was effected. At the present time there is no appreciable leakage on the system.

The hydraulic power is sold by meter, the charges being based on a sliding scale, commencing with a minimum charge of 25 shillings per quarter per machine, for which sum 3000 gallons is supplied, and where the consumption is up to 500,000 gallons per quarter the charge is 2 shillings per thousand gallons. For very large consumptions the charge is still further reduced. We believe the average rate obtained by the company is about 3 shillings per thousand gallons. The principal use of the power is for intermittent work in cases where direct pressure can be employed, as, for instance, passenger elevators, cranes, presses, warehouse hoists, &c. For such purposes hydraulic power has been long recognized as being the best and most trustworthy. It is not surprising, therefore, to find that this company have secured so large a share of the lifting work of London. It has been proved more convenient and satisfactory than any private system of power supply, and the sliding scale of charges adopted by the company has enabled them to meet the requirements of both small and large consumers with profit to themselves and the public Circumstances differ so widely that it is not perhaps possible to make any general statement as to the economy of power over older systems, but in many cases proprietors of wharves have found the saving sufficient to pay the cost of the new hydraulic machinery substituted for steam or other plant in three or four years. In a great number of cases also the pumping machinery of existing hydraulic plant has been abandoned, the company's charges being found to be below the actual running expenses of the consumer's own plant. In new premises there is, of course, the large additional saving in the smaller outlay of capital required. The most notable instance of the economy of the public supply system is, perhaps, at the London Docks, where about half the power used is now taken from the company; but most of the principal railways, wharves, hotels, warehouses and office buildings now make more or less use of the company's power. There are also a good many rotary motors at work, principally Brotherhood's well-known three-cylinder hydraulic engine. The electric current used by the Exchange Telegraph Company is obtained from a dynamo worked from the hydraulic power mains, and in addition to the hydraulic engine fitted up for them by the Hydraulic Engineering Company a few years ago, the company have recently fixed for them a Pelton wheel. Such a wheel is obviously well adapted for dynamo driving, and it is interesting to note that the difficulties of employing pressures of 700 pounds or 800 pounds per square inch have been overcome.

A very important use of the hydraulic power requires to be noticed—*i. e.*, its application to the extinguishing of fire by means of Greathead's injector hydrant; about 100 of these hydrants are in use. Queen Anne's mansions, St. James's Park, have them on every floor. The buildings of New Scotland Yard and the National Gallery are also fitted with them, and there are a few in the streets. By the use of these hydrants a continuous fire engine is available.

The system of hydraulic power which we have been describing is being adopted in other towns. It was first established in Hull in 1875; then came London in 1882; Liverpool followed in 1886 The system has also been established in Melbourne and Sydney. The Birmingham Corporation recently commenced to supply hydraulic power on their own account, and works have just been commenced in Manchester and Glasgow. The development of this branch of hydraulics has been almost exclusively of English origin and growth, and at the present time it may confidently be stated that nothing approaching the installation we have been describing is to be found elsewhere. The capital outlay in London has been nearly £400,000, and the dividend paid for 1891 was 5¼ per cent.

The Tonnage of the Valleys.

The following is the annual report of the Mahoning and Shenango Manufacturers' Association for the Mahoning Valley. The figures will be found interesting, particularly the comparative statement, in which it is shown that in the last 13 years the grand total tonnage of the valley has increased 2,046,030 tons. The compilation was made by H. S. Evans of the Manufacturers' Association and is accurate.

The report is as follows:

Tonnage statement for year ending December 31, 1892.

ROLLING MILLS.

Shipments.	Tons.
Number of gross tons muck bar	17,457
Number net tons finished iron, including bar, band, hoop, sheet, shafting, spikes, washers, nuts, bolts, pipe	387,839
Number gross tons mill cinder	68,691
Total tons	473,987
Receipts.	**Tons.**
Number tons pig iron	143,171
Number tons ore	56,156
Number tons muck bar, plate and skelp iron	50,970
Number tons billets	32,123
Number tons scrap iron and old rails	83,862
Number tons slack and coal	629,184
Number tons brick and fire clay	11,502
Number tons sand	18,171
Total tons	1,025,139

FURNACES.

Shipments.	
Pig iron (gross tons), total	511,121
Receipts.	
Number gross tons ore	855,364
Number gross tons cinder	62,417
Number net tons coke	584,382
Number net tons slack and coal	22,967
Number net tons limestone	236,593
Number net tons sand	19,160
Total tons	1,780,883

MISCELLANEOUS.

Foundries, machine shops, boiler works, bridge works, &c.:	
Receipts	112,950
Shipments	94,520
Total receipts	2,918,972
Total shipments	1,079,628
Grand total	3,998,600

Annual tonnage capacity, based on 300 days' operation:

CONSUMPTION.

	Tons.
Iron ore	1,091,250
Coke	830,325
Limestone	434,250
Sand	52,055
Coal	750,425
Brick and clay	21,600
Cinder, scrap, iron and steel billets and general supplies	335,200
Total consumption	3,485,105

OUTPUT.

Pig iron, finished iron and steel	1,246,375
Total	4,731,480

Comparative statement, showing the growth of iron and steel manufacture in the Mahoning Valley from the year 1880 to the year 1893:

1880.	Tons.
Total receipts	1,522,360
Total shipments	430,210
Grand total tonnage	1,952,570
1888.	Tons.
Total receipts	1,933,190
Total shipments	532,210
Grand total tonnage	2,465,400
1892.	Tons.
Total receipts	2,918,972
Total shipments	1,079,628
Grand total tonnage	3,998,600

OBITUARY.

ROBERT PATTERSON.

Robert Patterson, a member of the firm of Hughes & Patterson, iron manufacturers, died in Philadelphia, 19th inst., after a short illness. Mr. Patterson was born near Collegeville, Montgomery County, and was 73 years of age. In his early life he taught school near his birthplace, but went to Philadelphia when about 21 years of age and secured a position as a clerk in the Fairhill Rolling Mills. It was while thus engaged that he met Mr. Hughes, and the two formed a partnership and erected a small plant at Otis street wharf. This was late in the '60s, and since that time the business has prospered and developed until now it is one of the largest of its kind in Philadelphia.

WILLIAM H. PHILLIPS.

The sudden death of William H. Phillips, proprietor of the Taunton Iron Works, Taunton, Mass., on Sunday morning, April 23, is announced. Mr. Phillips had long been connected with the Taunton Iron Works as one of the principal owners, and for several years had been the sole proprietor. He had been also prominently identified with various business enterprises at home and abroad.

J. J. McCabe, successor to E. P. Bullard, is moving into new quarters, 14 Dey street, New York, where he has improved facilities and large showrooms that will enable him to carry in stock machine tools built by the following firms: Fitchburg Machine Works, Powell Planer Company, Prentice Bros., Hendey Machine Company, and other new improved tools.

Fred. Heron, general manager of the Phoenix Iron Works, Phoenixville, Pa., gives us the following wonderful performance of one of the open-hearth furnaces at their works. The furnace is a 20-ton acid open-hearth furnace, and for the week ending Saturday, April 8, the unparalleled amount of 424 tons (2240-pound tons) was melted in this furnace. In the 12 turns comprising the week's run, this furnace was charged and made 20 heats of low-carbon steel, the carbon being under 0.14. The last heat was tapped at 3.30 Saturday afternoon. This enormous output seems more remarkable owing to using as high as 40 per cent. pig and 60 per cent. scrap. We would be pleased to hear of any works approaching this quantity of steel made in a 20-ton furnace. The greatest credit is due to Mr. Brown, who has charge of these furnaces, as under adverse circumstances no such number of heats could possibly have been made. We have heard of large quantities of high-carbon steel being made in open-hearth furnaces, but never has this high efficiency been obtained with low carbon. Several radical changes have been made in the designs of the Phoenix Iron Company's furnaces, and they believe they have reached as nearly as possible a point where they can rest for the present.

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The European Spelter Product.

Through the courtesy of the American Metal Company of New York, we are enabled to present the following statement, compiled by Henry R. Merton & Co. of London, of the production of spelter.

Spelter Production. Gross tons.

	1892.	1891.
Rhine District and Belgium..	143,505	139,695
Silesia.....	87,760	87,080
Great Britain.....	28,590	29,410
France and Spain.....	18,462	18,360
Poland.....	4,270	3,760
Austria.....	5,020	6,440
Total Europe.....	287,607	284,745

The American Metal Company estimate the spelter product of the United States at 77,650 gross tons for 1892 and 71,756 tons for 1891.

New Publications.

MUNICIPAL IMPROVEMENTS. A Manual of the Methods, Utility and Cost of Public Improvements, for the Municipal Officer. By W. F. Goodhue, C.E., member of the Western Society of Engineers. New York: John Wiley & Sons. 1893. $1.50.

To those citizens who suddenly find themselves called upon to fill a place in the councils of their city or town, or some other public office, and who have had little or no previous acquaintance with the questions regarding municipal improvements which must come before them, such a handy little work as that of Mr. Goodhue will be extremely useful. Avoiding in general the use of technical words and phrases, as well as mathematical tables and formulæ, the author has here given in compact form a great deal of useful information in regard to such public matters as come under the jurisdiction of municipal officers. Treating, as it does, of such important questions as sewerage, street-car lines, street sprinkling, lighting, water work, building laws, &c., the newly elected magistrate or councillor who is desirous of obtaining an intelligent acquaintance with these necessary subjects should find this a helpful little work. The last chapter, treating of "Cleanliness and Public Health," is particularly worth the perusal of all concientious public officers.

The meeting of the iron and steel workers held at Youngstown, Ohio, on Sunday, the 23d, which was attended by officials of both the Amalgamated Association of Iron and Steel Workers and the National Finishers' Union, turned out to be less important than was anticipated. Only finishers were admitted to the meeting, puddlers and others being barred out. Addresses were delivered by M. M Garland, president of the Amalgamated Association, and also by Assistant President McEvey and ex-President Wm. Weihe, and by President Carey and Vice-President Gessman of the National Finishers' Union. These addresses were said to have been of a character that would indicate that it is the desire of the officials of both organizations to arrive at a settlement of the differences existing between them, with a view of again uniting in one organization. No formal action looking to the accomplishment of this object was taken, but another meeting will probably be held in a short time, at which, it is thought, active steps will be taken looking to the merging of both organizations into one body.

John Birkinbine of Philadelphia has returned from an extended trip in Mexico, where he investigated the principal iron industries of that country.

Clemens Jones and James Madison Porter have established the Easton Testing Laboratory at 433 Northampton street, Easton, Pa.

MANUFACTURING.

Iron and Steel.

The 33-inch mill of the Homestead Steel Works, Homestead, Pa., which has been idle for some time undergoing extensive repairs, has again been put in operation. During the shutdown the tables and other machinery were overhauled and are now operated by electricity, the change doing away with the services of a considerable number of skilled men. The 23-inch mill is also undergoing similar repairs, and will be ready for operations in a short time. It is stated that about 400 tons per day of structural material of various kinds is now being rolled in the Homestead Steel Works, which amount is nearly equal to the entire consumption of the country. The Bessemer department is said to be turning out very nearly 1000 tons of Bessemer steel in various forms per day.

John Hamilton of Pittsburgh, manufacturer of Hamilton's best redipped American roofing plates, recently supplied the Pittsburgh Locomotive Works, Allegheny, Pa.. with 150 boxes of 20 x 28 inch plates of the above brand.

At a meeting of the Fuel Gas Engineering Company, held in their offices in the *Times* Building, Pittsburgh, last week the following officers were elected for the ensuing year: M. V. Smith, president; C. C. Morrow, secretary; John A. Elliott, treasurer; F. R. C. Perrine, general manager.

William Swindell & Bros., engineers and contractors, Pittsburgh, Pa., have just completed and put in operation another of their improved regenerative furnaces at the McKeesport Iron Works, of W. Dewees Wood Company, McKeesport, Pa., manufacturers of patent planished sheet iron and steel. This is the eighth furnace of this design built for this plant since September, 1891, all of which are supplied with gas by nine Swindell producers by the same firm. It is stated that this is the only mill in the country using manufactured gas entirely for the production of sheet iron and steel and the results obtained are said to be satisfactory in every way.

The Schultz Bridge & Iron Company of Pittsburgh have closed a contract with the Akron Steam Forge & Iron Company, Akron, Ohio, for the erection of a new forge and machinery building, for which about 270 tons of structural material will be required.

Henry Aiken, consulting mechanical engineering, Lewis Block, Pittsburgh, is erecting two ingot extractors in the Bessemer department of the Joliet Mills of the Illinois Steel Company.

The White River Iron & Steel Company of Muncie, Ind., will soon commence work on a large addition to their rolling-mill department.

The Wheeling Steel & Iron Company of Wheeling, W. Va., have recently placed an order with the Babcock & Wilcox Boiler Company for 1500 horse-power boilers of the above type to be placed in their top mill.

On Saturday the 15th inst. the coal and iron lands in Hocking, Perry and Athens Counties, Ohio, belonging to the Ohio & Western Coal & Iron Company of Columbus, Ohio, were sold under the hammer to representatives of the Eastern bondholders for $434,000, the appraisal of the property being $600,000. About 4500 of the 6000 acres are coal and iron lands, and there are four blast furnaces: Helen at Orbison, XX at Shawnee and A and B at Floodwood. The land was bonded for $3,000,000 to $3,500,000 and the accumulated interest amounted to about $1,000,000. It is reported that the sale is preparatory to reorganization and the operation of the coal properties and furnaces of the company. It is stated that royalties on some of the coal properties leased to other companies under the receivership have amounted to about $60,000 a year.

The Tennessee Coal, Iron & Railway Company will erect machine shops at Bessemer, Ala., to do the repair work for their Oxmoor, Bessemer and Blue Creek divisions. The output of their furnaces at Bessemer is being increased by the erection of three new blast stoves for furnaces No. 3 and 4; an additional blast stove is also being put in the Little Belle furnace. The company are also putting in a large flue at their coke ovens at Pratt City to conduct the heat from the ovens to the shop boilers. It is estimated that the heat thus saved will amount to $60 per day.

The Bellaire Nail Works, Bellaire, Ohio, have placed through the Pittsburgh office of the Babcock & Wilcox Boiler Company an order for 500 horse-power boilers of the above design, which are now being put in place.

A general creditors' bill was filed in chancery court last week for the Lookout Iron Company of Harriman, Tenn. The complainants in the bill were the East Tennessee Land Company and the Harriman Land Company. The sum involved in the suit, including everything, is about $135,000. The chief creditors of the concern are the two complainant companies, the Citico Iron Company of Chattanooga and the Tennessee Coal & Iron Company. The bill gave no estimates whatever of the assets of the Lookout Iron Company. It is claimed, however, that the iron plant, which is one of the best in the South, is worth $250,000. James D. Roberts of Harriman was made receiver and he will at once begin to wind up the affairs of the company. It is the general opinion that the company will be reorganized at an early day.

The Woodward Iron Company, Woodward, Ala., have let the contract to the Elmore Iron Works of Birmingham for the construction of additional blast stoves for their furnaces at Woodward.

The Burgess Steel & Iron Company, Portsmouth, Ohio, state that the demand for their rolling mill products, merchant bars, cold-rolled shafting, &c, is so great as to necessitate continuous operation day and night. A handsome new structure is being erected on the premises to be used for office purposes.

It is stated that the Gadsden Pipe Works, at Gadsden, Ala., are preparing to double the capacity of their plant.

At the Fallhill Iron Works, Poughkeepsie, N. Y., workmen are busy on the furnace, taking down the old north stack and accessory buildings. In their place it is intended to erect a new furnace of much greater capacity and with the best and latest improvements. A new set of engines is to be put in, as those now in use have done duty for many years, and have for a long time performed more work than they were designed for.

The Lady Ensley Coal, Iron & Railway Company, Birmingham, Ala., went into the hands of a receiver April 10 for the purpose of protecting unsecured creditors. Major W. K. Saulsbury of Birmingham was appointed receiver. This is one of the largest mining and manufacturing corporations in the South, and the property of the company consists of coal mines at Horse Creek, coke ovens at Jasper, the Hattie Ensley Furnace and one-third interest in the Lady Ensley Furnace at Sheffield, &c. The company going into the hands of a receiver will not, however, affect the operation of the mines and furnaces.

It is stated that the Dayton furnaces, at Dayton, Tenn., will go out of blast May 1 for an indefinite period. Dullness in the iron trade is the cause.

J. A. Wilder, president of the Alabama Steel Works, at Fort Payne, Ala., returned last week from a trip East, and makes the statement that he has raised $50,000 for a working capital to start up the steel works there and that work will be commenced at once with a view to turning out steel not later than May 15.

It is stated that the citizens of Alliance, Ohio, have subscribed $40,000 in order to insure the location of a rolling mill at that place.

Furnace D of the Maryland Steel Company, at Sparrow's Point, Md., has blown in for the first time. The furnace, which has a capacity of 250 tons per 24 hours, was built at the same time the three other stacks were constructed, but was allowed to remain idle until the present time.

The employees of the Crumwold Furnace of Robert H. Coleman, at Emaus, Pa., have had their wages increased 10 per cent.

Preparations are under way to blow in the Crown Point Furnace, at Crown Point, N. Y.

The blast furnace of the Kittanning Iron Company, at Kittanning, Pa., has resumed blast. The mill of the company is also running to full capacity.

Jefferson Furnace, at Steubenville, Ohio, has shut down to reline and make repairs. It is said that operations will be suspended for three months.

Coxe's iron breaker, at Oneida, Pa., has resumed operations. The breaker was burned about a month ago, but owing to the fact that iron had been largely substituted for wood in its construction, the loss amounted to only about $7,000. The original cost of the plant is stated to have been $80,000.

Four big Massick & Crooke stoves for the Rosena Furnace, at New Castle, are being built at the Enterprise Boiler Works of Youngstown, Ohio. The stoves will be 18 x 65 feet, with a stack 50 feet high on each.

The Shenango Valley Steel Company of New Castle, Pa., have bought the Red Jacket Furnace of that place, paying $250,000 for the plant. The Red Jacket Furnace was originally built by the Kimberly Iron Company, composed of P. L. Kimberly, German Kimberly, George L. Reis and W. E. Reis. In 1883 it became the property of the Crawford Iron & Steel Company, with W. E. Reis as manager. The property consists of one large fur-

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nace, four Whitwell hot-blast stoves and a draft stack 195 feet high.

Machinery.

The Roberts Mfg. Company, 2626 Smallman street, Pittsburgh, manufacturers of detachable steel link belting, sprocket wheels and shafting, whose plant was recently destroyed by fire, have secured new and enlarged quarters at Twenty-first and Smallman streets, in that city, and are now fitting up the buildings for the manufacture of the above specialties. The new works will allow a much larger output, and operations will be commenced within the next few days. At present the concern are filling orders from stock.

The machine and erecting shops of the Baltimore & Ohio Railroad Company, formerly located at Bellaire, Ohio, have been removed to Benwood, W. Va., where new and larger shops have been built.

The Cleveland Stamping & Tool Company of Cleveland, Ohio, have increased their capital stock from $25,000 to $100,000.

In the United States Circuit Court at Pittsburgh last week, papers were filed in the suit of Charles Johnston against the Union Switch & Signal Company of Pittsburgh for $36,982.82 for services as manager of the company and royalties on various inventions to which he lays claim.

Electric mining machines have recently been introduced into a number of the larger mines located in Fayette Township, Fayette, Pa., and it is claimed the results obtained from these machines have been highly satisfactory. In all probability a number of other coal operators will introduce these labor-saving machines at an early date.

The foundry department of the Champion Iron Company, at Kenton, Ohio, was destroyed by fire on April 16, entailing a loss of about $9000

The demand for the Colliau cupola furnace has encouraged Byram & Co. of Detroit, Mich., to add eight new sizes, making 16 different sizes in all. They have recently made shipment to the Ohio Falls Car Mfg. Company, Jeffersonville, Ind.; the Marion Steam Shovel Company, Marion, Ohio; the Bignall Mfg. Company, Medina, N. Y.; R. S. Newbold & Son, Norristown, Pa.

The Eynon-Evans Mfg. Company of Clearfield street, Philadelphia, brass manufacturers, finding their present premises too small for their business, have purchased a stone building 35 x 60 in the rear of their foundry, which they propose to use for purposes of foundry extension. They will take possession of the building June 1, and will put in additions to their plant as quickly as possible. The company make a specialty of injectors and heavy brass valves, and with their increased facilities for work will be able to furnish employment for about 50 hands.

Alfred Box & Co. of Philadelphia report business in their line good and orders plentiful. They have just completed a traveling crane of 25 tons capacity and about 60 feet span, for Lloyd Booth Company of Youngstown, Ohio; another one of 15 tons capacity and 25 feet span for the Jobdell Car Company of Wilmington, Del., the second supplied to that concern; another to the Barr Pumping Engine Company of 5 tons capacity. Among the orders they are now engaged on is one from the Lloyd Booth Company for a second crane of less capacity than the one just delivered to them.

The Geo. V. Cresson Company of Philadelphia supplied the shafting, pulleys and everything in connection therewith required for the machinery exhibit at the World's Fair of the Brown & Sharpe Mfg. Company of Providence, R. I. They also supplied the shafting for the *Puck* Building.

The enterprise started at Ogdensburg, N. Y., some time ago by Nash Brothers, machinists, is meeting with decided success. They have outgrown their present quarters, and although new buildings have been erected for their boiler works, blacksmith shops, &c., from time to time, still another and larger addition will have to be built to the machine shops.

The Ewen Bros. of Wellsville, N. Y., are building at their shop the largest boiler ever constructed in that part of the State. It is for the Central Gas Light Company of New York, is 6½ feet in diameter and weighs 12 tons.

The Beecher Single Rail Railway Company have been incorporated at Buffalo, N. Y., with a capital stock of $400,000. The company are formed for the purpose of manufacturing and dealing in all kinds of electric motor power locomotives, street cars, gas and compressed-air motors and to deal in patented electrical appliances. The stock is divided into 4000 shares of $100 each. The directors for the first year are: Charles A. Seaver, Lima Beecher of Batavia, N. Y.; Guy C. Hardesty, Alfred J. Hibbard, Buffalo, N. Y.; George Sikes, Lake View, N. Y.

Oswego, N. Y., is to have another large machine works with a capital of $60,000. The company will be known as the Oswego Machine Works and the incorporation papers have been filed. The incorporators are: Dudley M. Irwin, Niel Gray, Jr., Niel Gray, R. J. Oliphant and E. M. Lockwood. The principal manufacture of the company will be printers' and bookbinders' machinery.

J. J. Pie & Co.'s machine shop and foundry, at Osceola, Pa., have been destroyed by fire, at a loss of $20,000.

The Campbell Machine Company of Pawtucket, R. I., have purchased an interest in the business of the Rockingham Machine Company of Concord, N. H., and the plant of the latter's concern will in all probability be removed to Pawtucket.

The pattern house of Geo. R. Lombard & Co., foundrymen, at Augusta, Ga., has been burned, involving a loss of $15,000.

Ground has been broken at Cumberland, Md., for the new plant of the Cumberland Iron & Steel Shafting Company. The building will be in the form of two wings, one 180 x 78 feet and the other 283 x 80 feet.

Dean Brothers, manufacturers of steam pumps, at Indianapolis, Ind., have completed plans for their new works. The main building will be 900 feet in length, in L-shape, and 60 feet in width, and will be constructed of brick.

The new plant at East Boston, Mass., which is being erected for the use of the Atlantic Works and Robinson Boiler Works, is progressing rapidly. The two establishments were consolidated last December, at which time plans were drawn for a plant to cost $100,000.

Work has begun at Sheboygan, Wis., on the new boiler works of Optenberg & Pott, who will remove their business from New Holstein, Wis. The plant will cover a space of 5000 square feet.

The Parkersburg Engine & Foundry Works, with a capital of $100,000, have been chartered at Parkersburg, W. Va., by C. W. Robinson, A. C. Bruce, and others.

The Youngstown Foundry & Machine Works of Youngstown, Ohio, are now getting out a set of 20-inch bar-mill rolls for the Brown-Bonnell Iron Company. They have also received an order from the Reeves Iron Company of Canal Dover for a set of 24-inch chill sheet rolls. The foundry is busy in all departments.

Wm. Tod & Co. of Youngstown, Ohio, are erecting the engines to be used to operate the Ferris Observatory wheel at the World's Fair grounds.

Miscellaneous.

The Sterling White Lead Company of Pittsburgh have been granted a charter of incorporation, with a capital stock of $200,000 The directors are Gerard Smith and Wm. W. Lawrence of Allegheny and John L. Lawrence, Jr., of Pittsburgh. As stated before in these columns, the new concern will erect a plant for the manufacture of white lead at Kensington, on the Allegheny Valley Railroad, about 20 miles from Pittsburgh. The new concern will not be connected in any way with the White Lead Trust, but will carry on business entirely independent of that organization.

A meeting of the stockholders of the Damascus Bronze Company, Allegheny, Pa., will be held in that city on Tuesday, May 30, at 3 o'clock, for the purpose of voting for or against an increase of the capital stock of said company.

The shops of the Covington Brass Mfg. Company, at Covington, Ky., recently destroyed by fire, are being rebuilt and operations will have been fully resumed by May 20 next. The fire in no wise interfered with existing contracts, as arrangements have been made to fill all such promptly.

The Rodwell Mfg. Company of Niagara Falls, N. Y., have voted to increase their capital stock from $125,000 to $250,000. This is done in order to include in their works a plant for the manufacture of the Hausmann art metal goods.

The manufacture of brass and iron bedsteads has been commenced at the Oliver factory at Lockport, N. Y. Although arrangements have not yet been perfected for running the plant to its fullest capacity, it is expected that the manufactory will be able to furnish goods by next month.

Among recently-licensed corporations in Illinois are the following: The West Division Steamship Company, at Chicago; capital stock, $300,000; for building and navigating vessels and the construction and operation of dry docks and shipyards; incorporators, W. H. Wolf, James Mowatt and Charles E. Krimer. The Todd-Applegate Company, at Chicago; capital stock, $125,000; for the manufacture of portable time, temperature water and steam pressure recorders; incorporators, John L. Todd, Eugene W. Applegate and P. M. Queen. The Abbott Manganese Company, at Chicago; capital stock, $1,000,000; for mining and manufacturing manganese, iron and coal, and for quarrying and for conducting mines, quarries, stone and brick yards, blast furnaces, rolling mills, shops and boarding house; incorporators, Wyllys S. Abbott, Walter S. Strowger and Albert L. Stone. The Waltonian Mfg. Company, at Chicago; capital stock, $15,000; for the manufacture of angling goods; incorporators, Charles F. Johnson, Charles Loughridge and Grove E. Walter. The Fountain Water Lift Company, Chicago; capital stock, $1,000,000; incorporators, John W. Jeffrey, J. R. Weddell, Valentine H. Surgner, Elliott D. Robbins and Franklin H. Beirback. The Cleveland Slanting Spout Company, Chicago; capital stock, $100,000; incorporators, William Pate, Jr., Robert G. Pate, William Pate, Sr., and Burton H. Lang. Kingsland Machine Company, Chicago; capital stock, $200,000; incorporators, Philip S. Kingsland, William L. Marsten and F. B. Modica: Centrifugal Metal Company, Chicago; capital stock, $100,000; incorporators, Pliny B. Smith, Lewis C. Straight, Thomas H. Joyce. The Cycle Supply Company, Chicago; capital stock, $75,000; incorporators, Olin D. Ferguson, Michael Mueller, E. C. Patterson. Kappe-Berrian Mfg. Company, at Quincy; capital stock, $16,000; for the manufacture of agricultural implements; incorporators. William J. H. Kappe, George W. Berrian and Charles B. S. Schermerhorn. George L. Lenham Hardware Company, at Chicago; capital stock, $10,000; for a general mercantile and manufacturing business; incorporators, George L. Lenham, L. S. Lenham and N. L. Lenham. The Hardened Copper Company, at Chicago; capital stock, $500,000; for the manufacture of hardened copper plate and hardened copper goods of all kinds; incorporators, Chester W. Hamilton, Breston W. Barclay and H. P. Myers. The Barker Mine-Car & Foundry Company, Springfield; capital stock, $25,000; incorporators, John W. Black, J. L. Cook, Irving Barker. The Coil Spring Mfg. Company, Chicago; capital stock, $300,000; incorporators, Robert L. Commons, Frederick Meyer and Kolben Johnson. The Calkins Electric Burner Company of Illinois, Chicago; capital stock, $120,000; incorporators, Charles A. Warren, Richard B. Twiss, A. J. Montague. Economy Electric Company, at Chicago; capital stock, $1,500,000; to build electrical machinery and appliances; incorporators, G A. Gage, A. C. Haven and C. E. Potter. Wise Lubricating Company, at Chicago; capital stock, $25,000: for the manufacture of lubricating oils; incorporators, Horace Corbin, Horace E. Corbin and Manifred H. Corbin.

The Whitman & Barnes Mfg. Company of Akron, Ohio, will soon break ground at West Pullman, Ill., for a new plant, which the Chicago *Record* states will cost $500,000 and give employment to 2000 men.

By order of the Court of Chancery of New Jersey, the receivers of the Spiral Weld Tube Company will sell at public auction to the highest bidder on April 28, 1893, at 2 o'clock p.m., on the grounds formerly occupied by the Spiral Weld Tube Company in East Orange, N. J., all the right, title and interest of the said Spiral Weld Tube Company in and to United States patents numbers 393,743, 414,524, 429,568 and 445,197, and British patents numbers 8539 and 17,536.

The citizens of Kokomo, Ind., the pioneer gas city in the Indiana gas belt, are working energetically for the further development of their manufacturing interests. The Kokomo Enterprise Company have been organized for the purpose of acquainting manufacturers in every part of the country with the great advantages enjoyed by Kokomo as a factory center. A factory natural gas pipe line, to cost $60,000, and owned by the citizens, is being built to furnish desirable factories with free gas. Among manufacturing concerns which have just located at this point are the following: The Great Western Pottery Works, manufacturers of fine sanitary and table ware, who will build eight buildings, of stone and brick, with slate roofs, having a floor space of 87,000 square feet, and will employ 500 hands; the Whitaker Supply Company, manufacturers of brass goods for plumbers' supplies, and the Genebeck Canning Factory, which is said to be the largest canning works in the country.

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TRADE REPORT.

Naturally the suspension of payment by the Pennsylvania and the Maryland Companies has been the obsorbing topic during the week. No fear is expressed concerning the ability of the two great companies to regain their former position. The immediate effect upon the Iron trade is, however, regarded with apprehension. It has unquestionably rendered doubly difficult for Iron manufacturers and merchants the present awkward financial situation. After such a shock to the banks, the financial strength of all members of the Iron trade will be under suspicion. It is urged, however, that unless the banks pursue a liberal policy, within the bounds of business-like caution, any trouble forced by extreme measures must recoil on themselves. In any case a very conservative and cautious policy is bound to prevail for a long time to come.

The one struggle in Cleveland has not yet reached a crisis. It is understood that some of the leading Ore mines of the Gogebic Range have been trying to arrange for a reduction of cost of production, by inducing both the owners of the fee and the railroads to make concessions, the action of the one to be contingent upon the acquiescence of the other. Until now nothing has come of it.

Bessemer Pig appears for the present to have settled down to $13.50 Pittsburgh, so that more than one-half of the "soda water rise" has been lost.

Billets have similarly dropped back to pretty near their old level, prompt Steel commanding $22.25 @ $22.50 at Pittsburgh, while later delivery is considerably lower. For the second half of the year, Cleveland Rod mills have purchased about 20,000 tons in the Wheeling district at $21.50 @ $21.75. With Bessemer Pig at $13.50, this leaves a comfortable margin for conversion, while those works who make their own Pig under the conditions surrounding modern plants would be doing quite well at such a price. It is asserted that even at the lowest notch reached during the last six months, some of the conspicuous producers in the Pittsburgh and Wheeling districts have had balances on the right side.

Foundry Irons and Mill Irons are slow of sale in nearly all the leading markets, Chicago, besides, being adversely affected by local labor troubles.

In Bars there is more movement on the part of carbuilders in Eastern Pennsylvania, while in the Chicago market the agricultural implement makers are beginning to negotiate their contracts.

Plates are dull, and in some markets are weak. The wretched condition of the business has suggested an effort to make a pool.

Contracts for Structural Material are cropping up in different parts of the country, but the sharp fight in Pittsburgh and the intense competition in the East is keeping values very low.

Copper has settled down squarely to 11¢ and Tin has eased off again, after a brief period of artificially created firmness. The threat of importations of Foreign Lead has put a check to the buoyant feeling in that metal.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., April 25, 1893.

The events of the past week have not been such as to give much comfort to those who have been looking for favorable developments in the Iron and Steel trades. On the contrary, the feeling has become one of extreme depression, and it is a question now whether it will be possible to maintain even the present unsatisfactory position. As we have remarked in this article time and again recently, it is not a question of business so much as a question of prices. The volume of business is large enough—almost, if not quite, the largest on record, yet manufacturers all say they are making no money, and as there is neither a prospect of lower cost nor of higher prices, the situation is indeed gloomy. Naturally the question arises, "Why don't manufacturers get better prices?" It is easy enough to ask the question, but not easy to answer it. In the first place, the capacity for production has expanded enormously, and in the next place, the demand, while large, is in some lines from 20 % to 30 % less than productive capacity. On an average, the capacity actually in operation may not be more than 5 % to 10 % in excess, but it is the 5 % or 10 % excess, or whatever the amount may be, that makes the price for the entire product. Some people think the only way out of the difficulty is to pattern after the Steel Rail arrangement, and something of the kind is said to be under consideration as regards Plates and Shapes; 10¢ or 15¢ ₱ 100 lb extra would be a wonderful advantage to manufacturers, without being any detriment to consumers. As matters stand to-day the outlook is very unsatisfactory, although, as we said before, there is business enough—what is wanted is better prices.

Pig Iron.—In spite of all unfavorable influences, Pig Iron is beginning to attract attention because of its statistical position. Good Irons are scarce, scarcer than they have been for months past, and those who are bound to have first-class brands are lucky if they can get what they want at quoted rates. There is Iron enough, of course, but after making all due allowances, there is less Iron to be had to-day at a given price than there has been at any time since last summer. Business is not in such a condition as to warrant holders in asking higher prices, but they won't shade quotations, and in some instances are not taking all the orders that are offered even at their own prices. They are under contract for about all the Iron they can make up to the middle of July or August, and under present conditions are not disposed to engage beyond that. From present appearances it is probable that business will be somewhat curtailed until it is seen what will turn up within the next 30 or 60 days. There is plenty of room for improvement, and very little chance of anything less favorable as regards this particular interest, but with so many contingencies to meet in the very near future both buyers and sellers are inclined to restrict operations within the narrowest limits possible. Meanwhile, the usual asking prices are about as follows for Philadelphia and equivalent deliveries, with 25¢ @ 50¢ less on Southern brands at Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X	$16 00	@	$16.50
American Scotch, No. 2X	15.00	@	15.50
Standard Penna. (Lake Ore), No. 1x	14.75	@	15.25
Standard Penna. (Lake Ore), No. 2x	14.25	@	14.50
Standard Virginia, No, 1x	14.50	@	14.75
Standard Virginia, No. 2x	13.75	@	14.00
Virginia and Southern, No. 1x, Soft	14.00	@	14.50
Virginia and Southern, No. 2x, Soft	13.25	@	13.50
Standard Penna. and Virginia Forge	13.00	@	13.25
Ordinary Forge	12.50	@	12.75

Freights.

Alabama Furnaces, Rail to Philadelphia	$4.31	@	.....
Alabama Furnaces, Rail and Water to Philadelphia	4.01	@	....
Alabama Furnaces, Rail to Baltimore and Harrisburg	4.06	@	....
Virginia Furnaces, Rail to Philadelphia	2.25	@	$2.75
Virginia Furnaces, Rail to Harrisburg	1.50	@	2.00
Virginia Furnaces, Rail to Baltimore	1.75	@	2.25

Steel Stock.—There is no general demand, but a few sales have been made, including one of 2000 tons of Low Phosphorus at a trifle over $18, delivered. Nominal quotations are as follows: Ordinary Bessemer, $15 to $15.25, delivered; Standard Bessemer, $16 @ $16.25; Low Phosphorus, $17.75 @ $18.25.

Steel Billets.—Business moves slowly, prices being at a point which is not satisfactory to either buyers or sellers. Western Steel is offered at $24.75, with buyers for moderate quantities at $24 @ $24.25. Sales have been made at $24.50, and on firm offers would probably be made again at the same figure; but with the present outlook consumers are inclined to look for a reaction to the old figures, and unless absolutely in need of material are not making offers even at the inside figure.

Steel Rails.—There is nothing of interest to report in this department. Mills are fairly supplied with orders up to about midsummer and prices are unchanged at $29, f.o.b. cars, and for Girder Rails, $32.50 @ $34 50.

Muck Bars.—Asking prices are $22.50 @ $23, f.o.b. cars sellers' mills, but there is little or no demand, so that prices are purely nominal, although $23, delivered, was paid in a recent transaction.

Since writing the above, several sales of small lots have been reported at figures as above named.

Bars —The demand is about the same as for some weeks past. Some mills report a fair run of orders, others are doing very little and in all cases prices are low and unsatisfactory. There is more inquiry from car builders, but 1.55¢, delivered, is about all that can be obtained, and for best Iron, city delivery, 1.62½¢ @ 1 65¢ is quoted. Some mills ask higher figures, others accept less than any of these quotations; all depends on what the order may be, as to quantity, quality, delivery, terms of payment, &c. Steel Bars are quoted from 1.60¢ to 1.85¢, according to quality specifications.

Skelp.—There is about the usual demand, no more. Mills that are in operation at all are fairly busy, but 1.52½¢ @ 1.55¢, delivered, is all the market will afford.

Plates.—In this department business holds its own and in the near future promises to do a little better. The shipyards are beginning to specify for heavy deliveries during May and June, so that the available capacity to meet the current demand is likely to be less than it has been for several months past. As a matter of fact, all the large mills have plenty of work on their books, and if the buyers specify for it during the next three or four months, as now seems probable, the supplementary day-to-day demand for small lots will probably insure comfortable activity all around. The Schuylkill Valley mills have a large amount of miscellaneous work in hand, while Chester and Harrisburg, besides 15,000 to 20,000 tons for the shipyards, are also well supplied with the general work, so that there is a fair chance for somewhat better prices during the summer months. For the present quotations, delivered, are about as follows:

	Iron.	Steel.
Tank Plates	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell		2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities		3.25 @ 3.75¢

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Structural Material.—There is nothing of special importance in this line, the only recent engagement being for 600 to 800 tons for the new Odd Fellows' Hall, material for which is to be furnished by the Pencoyd Iron Works. Small lots are in good demand, and as there is a considerable amount of old business on hand, mills are not badly off for work. Prices are very low, however, and engagements easily made at last week's prices, say: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.80¢ @ 1.90¢.

Sheets.—The demand is good and mills are running to full capacity. There is no change in prices, which are still extremely low and very unsatisfactory to manufacturers. Small lots quoted as follows:

Best Refined, Nos. 14 to 20.....2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....3.15¢ @ 3.20¢
Best Refined, No. 27.....3.30¢ @ 3.40¢
Best Refined, No. 28.....3.40¢ @ 3.50¢
Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ⅛¢ lower than here named:

Best Soft Steel, Nos. 14 to 16.....2⅛¢ @ 2⅝¢
Best Soft Steel, Nos. 18 to 20..... 2⅛¢ @ 3¢
Best Soft Steel, Nos. 21 to 24.....3⅛¢ @ 3¼¢
Best Soft Steel, Nos. 25 to 26.....3⅜¢ @ 3⅝¢
Best Soft Steel, Nos. 27 to 28.....3⅝¢ @ 3⅞¢
Best Bloom Sheets, ¼¢ extra over the above prices.
Best Bloom, Galvanized, discount..70 and 5 % @ 70 and 10 %

Old Material.—Dull and not easily salable at quoted rates, unless for something which happens to be wanted. General quotations are about as follows: Old Iron Rails, $18 @ $18.50, delivered; Old Street Rails, $19 @ $19.50; Old Steel Rails, $15 @ $16; No. 1 Railroad Scrap, $15 @ $16, Philadelphia, or for deliveries at mills in the interior, $15.50 @ $16, according to distance and quality; $8 @ $9 for clean new No. 2 Light Scrap; $7.50 for old No. 2 Light Scrap; $11.50 @ $12 for Machinery Scrap; $12 @ $12.25 for Wrought Turnings; $8 for Cast Borings, and nominally $22 for Old Fish Plates, and $13 @ $14 for Old Car Wheels.

Wrought-Iron Pipe.—There is no change in the general situation, which is still very unsatisfactory as regards both price and demand. Discounts are nominally as follows:

Butt-Welded Black.....60 %
Butt-Welded Galvanized.....50 %
Lap-Welded Black.....67½ %
Lap-Welded Galvanized.....57½ %
Boiler Tubes, 2¾ inches.....65 %
Boiler Tubes, 3 inches.....67½ %

Morris, Tasker & Co., Limited, of Philadelphia have taken the order for all poles for the new trolley systems in Philadelphia, Pa., and Newark, N.J. They are to be made or their special pattern, of Wrought-Iron Pipe, and will require several thousand tons of Skelp.

Louisville.

LOUISVILLE, KY., April 22, 1893

At no time during the past twelve months has the number of furnaces in blast or the quantity of Iron made been as large as during March, and yet the consumption seems to have exceeded the production by about 30,000 tons. The stocks of Coke Iron on hand—about 360,000 tons—are less by 25 % than at this period in 1892, and do not amount to three weeks' supply. Statistically the market is in excellent position.

Buyers all think business would be better if prices were higher for Pig and Manufactured Iron, but do not seem disposed to assist in the movement, still clinging to the hand to-mouth policy, which, though resulting in low prices, has also made a very steady market.

We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry... $12.75 @ $13.25
Southern Coke, No. 2 Foundry... 11.50 @ 12.00
Southern Coke, No. 3 Foundry.... 11.00 @ 11.25
Southern Coke, Gray Forge..... 10.50 @ 10.75
Southern Charcoal, No. 1 Foundry 15.00 @ 16.00
Southern Car Wheel..... 17.50 @ 17.75
Spathite ..... 11.50 @ 12.50

Cleveland.

CLEVELAND, OHIO, April 24, 1893

Buyers look upon the ore market more hopefully, although beyond some concessions from the vessel owners little change is to be noted in the general situation. There is nothing in the conditions now existing to indicate any heavy buying for a few weeks to come. The schedule of transportation rates for ore seems likely to be about as follows: Ashland and Two Harbors to Ohio ports, $1.10 ℔ ton; Marquette, 90¢ ℔ ton, and from Escanaba, 70¢ @ 75¢ ℔ ton. Navigation from the head of Lake Superior will not open for a few weeks. The market is being closely watched by both buyers and sellers and a sudden improvement in the Pig Iron market would probably precipitate a buying movement of big proportions. The total sales to date are estimated at less than 900,000 tons, and this amount is made of odds and ends, or special grades of ore that were bought in most instances to mix with higher grade ores that will be purchased later in the season.

Iron Ore.—About 40,000 tons of ore were sent forward to the furnaces during the past week as compared with 26,000 for the same week in 1892. The shipments from Ashtabula and Fairport have also been much heavier than they were a year ago. Indications are that navigation will open with the dock fairly well cleared of last season's ore. The non-Bessemers now on the dock are being sold for from $2.75 to $3.25 per ton according to the amount of iron and phosphorus they contain.

Pig Iron.—The local market is only moderately active and no large sales are noted. Dealers, however, look upon the situation hopefully and express the opinion that the heavy consumption reported everywhere, with the prospect of a still further increase, will soon begin to affect prices favorably. They certainly seem in no mood to buy Ore at the prices asked, except in small quantities for immediate use. Local quotations for Bessemer are $13.60 @ $13 70 per ton, equal to $13 in the Mahoning Valley.

Old Material.—The market is rather dull with dealers asking $15 per ton for No. 1 Railroad Wrought; $11 per ton for Cast Scrap; $10 @ $10.25 per ton for Wrought Turnings and $7 per ton for Cast Borings.

Nails.—The demand continues fair for Wire Nails at $1.55 per keg in carload lots.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts.,
CINCINNATI, April 26, 1893.

There has been a fair demand for Pig Iron from consumers in this district during the week, and the market may be called a steady one, although there have been rumors of cutting in prices, which, if it has been done, as is not improbable, for there are frequently some furnaces making concessions to effect sales, it is exceptional. The standard Iron companies in the Tennessee and Alabama districts are firmly adhering to the price of $9 for No. 2 Foundry and $8 for Gray Forge, f.o.b., Birmingham. Orders are freely taken on this basis for delivery up to September, and it would not be difficult for buyers to secure any delivery this year at these rates. Further sales of Mottled Coke Iron have been made at $7.90, f.o.b., Birmingham, at which price there appears to be a demand for all offered. Charcoal Iron is in rather better demand with favorable prospects of further buying by car works. There has been considerable Southern Iron taken for Eastern shipment, and although the buying is generally in small lots and seldom runs over 1000 tons in any one order, yet the aggregate is of considerable proportions. There is no longer any apparent anticipation of better prices during the summer and the trade seems to have settled down to a willingness to sell at current rates, but not to make concessions. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....$13.25 @ $13.50
Southern Coke, No. 2..... 11.75 @ 12.00
Southern Coke, No. 3..... 11 00 @ 11.25
Ohio Soft Stone Coal, No. 1..... 16.00 @ 16.25
Ohio Soft Stone Coal, No. 2..... 15.00 @ 15.25
Mahoning and Shenango Valley... 14.75 @ 15.00
Hanging Rock Charcoal, No. 1.... 19.00 @ 19.25
Hanging Rock Charcoal, No. 2.... 18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 1..... 15.50 @ 15.75
Tennessee and Alabama Charcoal, No. 2..... 14.50 @ 14.75

Forge.

Gray Forge ..... 10.75 @ 11.00
Mottled Neutral Coke..... 10.65 @ 10.90

Car Wheel and Malleable Irons.

Standard Southern Car Wheel..... 18.00 @ 19.00
Lake Superior Car Wheel and Malleable ..... 17.75 @ 18.00

Baltimore.

BALTIMORE, April 25, 1893.

The troubles of the Pennsylvania Steel Company, which were followed by that of the Maryland Steel Company, caused quite a flurry in Iron and Steel circles here, as elsewhere, although this was not an unlooked-for proceeding by those who knew how matters were going. This trouble will not affect the running of the companies, as they have contracts that will prove valuable if completed. The Maryland Steel Company is looked upon here with much pride, and a cessation of work there would be a serious calamity to Baltimore and other cities that are interested in its welfare. We cannot report the exact standing of affairs, as there has been no meeting of creditors to this date. We find the Iron and Steel market in much the same condition as last reported; but there are some good inquiries for Bars for mill shipment, also Plates, while prices are very unsettled. Stock trade is fairly good, but chiefly in small lots, with prices as close to the minimum as it is possible to go.

Refined Bars.—We quote these as follows: From mill, 1.75¢ @ 1.80¢; from stock, 1.80¢ @ 1.95¢.

Plates.—In this branch we can note a small improvement, both in inquiries and orders. Although there seems to be a fight going on as to who will take the business the prices are quite stiff. We quote Tank at 1.80¢ @ 1.90¢; Shell, 2.10¢ @ 2.20¢; Flange, 2 25¢ @ 2.35¢; Fire Box, 2.40¢ @ 2.50¢; Marine, 2.45¢ @ 2.55¢.

Merchant Steel.—In this branch, as is usual, Tire Steel has the lead, although the Machinery of the Open Hearth quality is in fairly good demand, while there are some consumers who will take Bessemer, as the prices are now about the same as good Iron. We quote Tire Steel at 2.10¢ @ 2.25¢; Machine Steel, Open Hearth, 2.10¢ @ 2.20¢; Spring, 2.40¢ @ 2 50¢; Toe Calk, 2.20¢ @ 2.35¢.

Tubes.—A fair amount of orders have been placed for this material, but the rise in prices came almost too quick on top of the demoralization that ruled before it. Boiler Tubes are now at 65 % off for 2 to 2¾ inches and 67½ % off for 3 to 4 inches, delivered. Stock sales are very good.

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Metal Market.

Copper.—All reports are to the effect that business has been slow in the local market and that the general situation is quite as cloudy as it has been at any previous time since the beginning of the year. As far as the reduction in the output is concerned there seems to be no force except, possibly, in checking a more or less serious depression in values. In any event it is the fact that 11¼¢ has become a common selling price for Lake Superior Ingot, while occasional transactions at a shade less have been noted and offers made to sell at 11.15¢ for distant future delivery on the Metal Exchange. Casting brands are also somewhat irregular, with 10½¢ the top quotation, and more than a vague possibility that really desirable orders would be taken at ⅛¢ @ ¼¢ less by some smelter. At the close there were rumors to the effect that one of the prominent Lake Superior producers has recently closed contracts with American consumers at 11¢ ℔ lb.

Pig Tin.—Prices were held quite stiffly by the "bull" interest during the early part of the week under review, on the basis of about 20¾¢ for spot stock. Speculation, however, figured less conspicuously than clever work in the direction of quietly moving out as much Tin as possible into the hands of interior dealers and consumers. Importations of 365 tons in a few days caused an accumulation that proved rather burdensome, however, and in connection with lower prices from London, led to a decline in prices to 20.60¢ for prompt and current month delivery. At the lower prices over 200 tons changed hands, chiefly for prompt and April delivery.

Pig Lead.—Owing to freer offering, along with manipulation by operators who wish to lower prices and rumors of some sales of foreign Lead on the basis of 4.17½¢, landed here, the market has weakened perceptibly. A few carloads were placed at 4.15¢; subsequently more went at 4.10c, and later on some lots at as low as 4.05¢. The latter price is below the importing point and buyers therefore manifest rather more interest again, although Western markets show some response to the late depression here.

Spelter.—Business in this metal has been very slow and the position of the market is practically the same as it was at the date of our last review. Western brands may be secured to a limited extent at 4.40¢, delivered, but most holders want 4.45¢ upward, and the offering at present is very moderate.

Antimony.—Outside of routine jobbing trade there has been little doing and prices remain almost stationary at 10¢ @ 10⅛¢ for Hallett's, 10⅜¢ @ 10½¢ for L.X. and 10⅝¢ @ 10¾¢ for Cookson's.

Tin Plate.—The market has remained stationary, that is to say, business in both spot goods and forward shipments has been on strictly conservative lines, while the movements in prices were confined almost wholly to special figures secured by energetic brokers on what are commonly termed "snap" lots. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, $5.50; light weights, $5.10 @ $5.12½ for 100 lb, $5 for 95 lb, $4.90, nominal, for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75; IX basis, $6.85. Charcoals — Melyn grade, IC, $6.50; Crosses, $8; Allaway grade, IC, $5.70; Crosses, $6.90; Grange grade, IC, $5.80; Crosses, $7. Charcoal Ternes—Worcester, 14 x 20, $5.70; do., 20 x 28, $11.35; M. F., 14 x 20, $7.25; do., 20 x 28, $14.50; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.70; D. R. D. grade, 14 x 20, $5.20; do., 20 x 28, $10.30; Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28 $9.70; Abercarne grade, 14 x 20, $4.95; do., 20 x 28, $9.50. Black Plates for tinning, to arrive, are quoted at $3.65 @ $3 70 for IX, and $3.70 @ $3.75 for IC, to arrive.

Financial.

A notable event occurred during the week when the traditional "dead line" was crossed in disbursing gold from the United States Treasury, and the $100,000,000 reserve was invaded, as a consequence of another shipment to Europe amounting to more than $6,000,000. As high as $4.89⅓ per pound sterling was paid for demand bills, entitling the holders to payment in gold in London, and rates for call loans suddenly advanced to 10 @ 12 %. On the part of some there was a disposition to construe the conditions prevailing in the sterling exchange market as a premium on gold. Simultaneously Secretary Carlisle issued a statement of his policy with reference to the payment of notes given in payment for silver bullion, to the effect that those payments would be made without discrimination so long as there was gold available for that purpose. He said: "The purpose of the Government to preserve its own credit unimpaired and maintain the parity of the two metals by all lawful means will not be abandoned under any circumstances," and, as if to silence conjecture, President Cleveland authorized a statement substantially reiterating the language of the Secretary. The feeling of anxiety in monetary circles was in a measure allayed, bankers and others conversant with the situation becoming assured that the Government could deal successfully with the grave financial problems awaiting a solution. Moreover, the inroad upon the gold reserve was soon made good by tenders from Western banks. An unexpected feature was the active buying of stocks on foreign account, after which the rates for sterling and call loans both declined.

On Friday, following the Treasury statement, quotations were generally ⅛ @ 2 % higher than on the previous day, which was considered a favorable omen considering the fact that the $100,000,000 reserve had been encroached upon for the first time since the resumption of specie payments. The threatened cataclysm having been averted, the presumption was that further withdrawals of specie for export would excite little apprehension. In any contingency the parity of gold and silver would be preserved. But it was not until Tuesday morning that the financial sky began to clear. Then the fact was given publicity that on the previous day the newly appointed Sub-Treasurer Conrad Jordon, just from Washington, had submitted at a conference of leading bankers and financiers a definite proposition from President Cleveland for a gold loan to the Government of $50,000,000, secured by a 3 % bond redeemable at the option of the United States Treasury. With some proposed modifications the scheme was cordially indorsed and now awaits the approval of the chief executive. Half of the amount named, it is conjectured, will at once be put upon European markets. Thus reinforced the Treasury will be equal to any emergency until Congress shall apply a permanent remedy.

The stock market on Monday, influenced by the statement by President Cleveland to the effect that there would be no change in the policy of the Treasury Department with respect to the Treasury notes of 1890, and that the parity between gold and silver would be maintained as contemplated by the act of July, 1890, opened strong and there was good buying for arbitrage account and to cover short contracts. The strongest were the industrials, the grangers, Missouri Pacific, Louisville & Nashville, Reading, Lackawanna, the Vanderbilts and Chicago Gas. Later news of the engagement of over $3,000,000 gold for export to Europe and Canada brought about an irregular decline. Toward noon it was reported that the Boston banks had offered $4,250,000 gold to the Government.

The Government bond market during the week was heavy for the Ext. 2s and 4s, but steady at unchanged prices for the currencies. Closings compare as follows:

	April 24.	April 15.
Ext. 2s, reg	99 @ ..	99½ @ ..
4s, 1907, reg	112½ @ ..	113 @ 113⅜
4s, 1907, coup	112½ @ ..	113 @ 113½
Currency 6s, 1895	105 @ ..	105 @ ..
Currency 6s, 1896	107½ @ ..	107½ @ ..

Money was active and firmer, owing to the calling in of loans to meet the export demand for gold, call loans touching 15 % on Friday. Not unnaturally the failure of the Pennsylvania Steel Company, explained to be due to stringent money, had an unfavorable effect, also another bank failure in Australia with $65,000,000 liabilities. The Pennsylvania Steel Company's paper is well scattered among the Philadelphia banks, but most of it is held by two prominent institutions carrying heavy lines of deposits. It is believed that company will pay their floating indebtedness and that the banks will not lose a dollar. The stock sold off on Monday from about par to 60. Rates for time money were about 6 % for all dates on approved collateral. The commercial paper market furnished the feature of the week, rates on such business displaying an advancing tendency, which was largely due to receipts of paper by the banks from their correspondents in the country for rediscount.

In the West money lately tied up in grain is being released for employment elsewhere. The price of silver bullion is unchanged. The bank return for the week shows an increase of $3,710,650 in reserve, which now stands at $14,783,200 surplus. The loans show a loss this week of $2,454,900; the specie is up $774,100.

Rates for foreign exchange were decidedly better at the close, there being little profit in shipments. Posted rates were reduced to $4.87⅓ @ $4.89½.

Imports of merchandise at New York for the past week reached the large volume of $14,298,000, as compared with $9,352,000 for the same week last year.

The merchandise markets are yet awaiting the spring revival. Wheat and flour are again lower, affected by large visible supplies and currency questions, and there is a fair export movement at the decline, which is expected to gain momentum on the arrival of the grain fleet, already started through the lakes. Provisions are dull and all pork products are dear on account of the scarcity of hogs. Cotton is weak and spot $\frac{5}{16}$¢ lower. Spot coffee declined about ⅛¢.

The report of the New York Bank Superintendent shows that the savings banks on January 1, 1893, show an unprecedented increase over any preceding year in the items of resources and liabilities. These banks have now to the credit of their army of depositors the vast sum of $649,368,275, and a surplus of $88,752,443. In like manner the trust companies show a degree of prosperity hitherto unequaled. The deposits in the aggregate for the year show an increase of nearly $30,000,000, and the resources of nearly $35,000,000.

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Coal Market.

At the meeting of sales agents on Tuesday the Western trade made a reduction from $1.90 to $1.75, equal to 15¢ ℔ ton, to conform to the previous reduction in the Eastern market made last March. Eastern prices remain unchanged. The company prices are firm at the adopted schedule, but trade is very slow, as usual at this season. Free Burning is quoted $4.15 alongside, and Hard Lehigh is 15¢ @ 25¢ ℔ ton more. Pea Coal is $2.50 @ $2.75, and Buckwheat is so scarce as to be scarcely quotable, but is about $2 @ $2.25. Cumberland Coal is $3.10 @ $3.15, f.o.b. Lower tolls on the Pennsylvania Railroad places Clearfield at a disadvantage where tolls remain the same. The Eastern demand is good.

The week's production of Anthracite is 800,000 tons; for the year, 11,614,903 tons—increase this year, 1,029,068 tons. Reading tonnage, 405,000 tons. Pennsylvania tonnage, 307,266 tons Coal and 104,482 tons Coke. An accumulation of interior and tide-water stocks is in progress. Mill and factory requirements are quite large, and small steam sizes are moving quickly.

The Flat Top operators in Virginia agreed upon an output this year of 5,000,000.

The new shaft of the Lehigh & Wilkesbarre Coal Company at Ashley, Pa., will have 90 feet of coal.

The German Iron Trade.

(*One mark per metric ton is equivalent to 24.8 cents per gross ton.*)

DUSSELDORF, April 8, 1893.

The firmer feeling which has characterized the Rhenish-Westphalia Iron market since the middle of March has continued, and the tendency is general to cover for raw material for an extended delivery. The orders for Pig Iron taken during March have tripled. For high grade Puddle Iron and for Thomas Pig an advance of 37¢ @ 50¢ has been obtained. Foundry Iron and Bessemer Pig remain unchanged at $15.37, while Foundry No. 3 is held at $13.64. The formation of the Foundry Iron Syndicate, which seemed accomplished, has met with difficulties in the last moment.

Ingots are quoted $18.10 @ $18.84; Billets at $19.10 @ $19 34, and Slabs at $19.59 @ $20.33 Business has grown more active in Bar Iron and the demand for Beams is livelier, causing a rise in the price from $21.08 @ $22.32.

The Wire business is very much depressed, Rolled Wire selling as low as $24.80, Drawn Wire at $27.28, and Wire Nails at $29.76 ℔ ton. Special quality Siegen Plates are quoted at $29.76 @ $31, while Ship Plates are $27 40 @ $29.76, and best Boiler Steel Plates $31 @ $32.24, while Wrought Iron Boiler Plates fetch $35.96.

Railroad Material is suffering from a very low range of values since the Belgium works have underbid the German establishments in the contracts for Metal Ties for the Baden and Hessian railroads. It is reported that the three large Belgium works, Cockerill, Ougree and Providence, have formed a pool to underbid the German works, the losses growing out of this being paid from a common fund. They hope to force the German Rail syndicate in this manner to pay the Belgium works for keeping out of the German market.

The reduction in the coke and coal rates alluded to in a recent report have gone into effect, but are chiefly favorable to the furnace companies of the Lorraine district, because the works of the Lower Rhine transship their Minette Ore to boats at Overlahnstein and receive no reduction on railroads to that point.

The coal syndicate recently created is meeting with very great difficulties in many ways. Dealers have contracted for large quantities at low prices if they are reselling. The South German and Prussian railroads, as well as those in Holland, are being offered coal at low figures. It was at first proposed to make a reduction in the output, but it has been found impossible to carry the matter through. The price asked by the coal syndicate on a contract of 1,800,000 tons for the Prussian State Railroads has been $1.98 ℔ ton.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, April 26, 1893

The Pig Iron market has been very quiet and the movement of prices extremely narrow. Warrants have fluctuated very little from 40/8 for Scotch, 34/ for Cleveland and 45/ for Hematite. Latest reports of stocks in public stores showed a total of 340,000 tons Scotch and 67,500 tons Cleveland. Shipments of Scotch and Cleveland Pig have been heavier, but mostly on account of old purchases. New business is moderate.

Pig Tin receded to £93. 15/ for prompts on adverse advices from New York, but improved later under the influence of purchases by leading London firms, only to recede again, particularly for deliveries after June. Deliveries for that month and further ahead were sold at £88. 15/, against £93. 10/ @ £93. 15/ for prompts.

Copper has been dull and price for Merchant Bar prompts dropped early in the week to £48. 7/6, subsequently recovering on outside speculative buying, but again weakened on flat American advices. Speculative operators are very cautious. Consumptive demand is fair.

The Tin-Plate market generally is dull. Sales light, except for a few special lines, Oil sizes in particular. There is a fair inquiry from San Francisco and Canada. Large American buyers appear extremely cautious. The output is increasing somewhat rapidly.

Scotch Pig Iron.—There has been little spirit in the market and prices have varied to a slight degree only.

No. 1 Coltness,	f.o.b.	Glasgow	53/6
No. 1 Summerlee,	"	"	49/
No. 1 Gartsherrie,	"	"	47/6
No. 1 Langloan,	"	"	53/
No. 1 Carnbroe,	"	"	43/6
No. 1 Shotts	"	at Leith	52 6
No. 1 Glengarnock,	"	Ardrossan	48/6
No. 1 Dalmellington,	"	"	47/
No. 1 Eglinton,	"	"	44/

Steamer freights, Glasgow to New York, 2 6; Liverpool to New York, 7/6.

Cleveland Pig.—A moderate business passing and prices easy, with sellers at 34/3, f.o.b. shipping port, for No. 3 Middlesborough.

Bessemer Pig.—Consumers buy slowly and the market is easy with sellers at 46/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—Business has been quiet, but prices are held quite firmly. English 80 % quoted at £10. 15/, f.o.b. shipping port.

Steel Rails.—A moderate trade passing and the demand rather slow. Heavy sections quoted at £3. 15/, f.o.b. shipping port.

Steel Slabs.—Very quiet market and prices nominal in a great measure. Bessemer quoted at £4, f.o.b. at shipping point.

Steel Billets.—The market remains quiet and unchanged. Bessemer, 2½ x 2½ inches, quoted at £4. 2/6, f.o.b. shipping point.

Steel Blooms.—Demand very slow and the market dull. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old Iron Rails.—A moderate business passing, chiefly at old prices. Tees quoted at £2. 7/6 and Double Heads at £2. 7/6 @ £2. 10/, f.o.b.

Scrap Iron.—Demand is slow, but prices remain steady. Heavy Wrought Iron quoted at £2, f.o.b.

Crop Ends.—Market very quiet and prices unchanged. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured Iron.—Orders still run light and prices show no radical change, although still in buyers' favor. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	0	0	@	.....		
Common "	6	5	0	@	6	7	6
Staff. Bl'k Sheet, singles....	7	7	6	@	7	10	0
Welsh Bars (f.o.b. Wales)....	5	7	6	@	5	10	0

Tin Plate.—The tone of the market fairly firm, but business slow and demand tame. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/3 @ 13/9
IC Bessemer Steel, Coke finish	12/0 @ 12/3
IC Siemens " " "	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20	12/0 @ ....
Charcoal Terne, Dean grade	13/6 @ 14/

Pig Tin.—Market closed dull, with prices barely steady. Straits quoted at £93. 5/ @ £93. 7/6 for spot and £88 @ £88. 5/ for three months' futures.

Copper.—Market unsettled at the close and prices irregular. Merchant Bars quoted at £44. 7/6, spot, and £44. 15/, three months' futures. Best selected, £49.

Lead.—The demand has been moderate, but prices are barely steady at £9. 12/6 @ £9. 15/ for Soft Spanish.

Spelter.—Demand is fair, and prices are quite firm at £18 for ordinary Silesian.

The officers and a number of the directors of the Gatling Town Site Company visited the town of Gatling, near Buffalo, N. Y., the other day and discussed plans for its benefit. Dr. Gatling expressed himself as hopeful that the stockholders of the Gatling Machine Gun Company would vote in favor of Gatling as the future home of the works. Said he: "Work has commenced on the steel plant for the heavy ordnance company, and as soon as finished a large number of men will be kept busy. There are a number of orders on hand now from different governments. Our own Government has appropriated $6,000,000 for the purchase of heavy guns of American manufacture. Our attention will probably be devoted to heavy ordnance for some time to come. I shall build an immense solid steel cannon which will have a number of improvements, and will be the most powerful gun in the world." Dr. Gatling will take up his residence in Buffalo soon.

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Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, April 26, 1893.

The unseasonable weather is affecting all classes of business. A very few days of spring have been followed by a recurrence of genuine winter, and the season is now fully a month later than usual. The failures in the Eastern Iron trade cause an uneasy feeling here, but no worse effects have yet shown themselves. The strike epidemic is now in full vigor, and considerable disturbance to trade is due to this cause.

Pig Iron.—The molders in the jobbing foundries here were called out by the union on Monday to enforce a demand for an increase of 25¢ per day to day workers and 10 % advance on piece work. Some employers have yielded to the demand, but the great majority are allowing their foundries to stand idle. This has caused considerable falling off in the Pig Iron demand, and there is much uncertainty for the future, as it is not known how long the strike may last. Local Irons have been quiet, but prices are unchanged. A great variation is perceived in quotations on Southern Coke, there being a spread of at least 75¢ ℔ ton between the figures asked by the leading companies and those quoted by small concerns, which are still anxious for business. Our quotations represent the medium prices asked by representatives of Southern companies, which are shaded from 10¢ to 25¢, according to circumstances. Quite a number of orders are in sight from outside buyers, but they are holding off at present in the expectation that existing conditions may lead to still lower prices. It will, perhaps, be well for the foundry trade if the strike should last for a little time, as competition for business among the foundrymen has been so keen that unusually low prices have been made for Castings. It is reported that $28 ℔ ton has been named on Castings not of the simplest form. Lake Superior Charcoal Iron is quiet in this immediate vicinity, but some good-sized sales are reported in outlying districts. A 1000-ton lot was sold at a price equivalent to $16 75, Chicago, and another lot of nearly the same size brought about $16.50. Small transactions are occurring at our quotations. Collections are slow, and generally speaking the condition of business is unsatisfactory to sellers. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	13.75 @ 14.25
Local Coke Foundry, No. 2	13.00 @ 13.25
Local Coke Foundry, No. 3	12.75 @ 13.00
Local Scotch	14.00 @ 15.00
Ohio Strong Softeners	16.00 @ 16.50
Southern Silvery, No. 1	@ 15.00
Southern Silvery, No. 2	@ 14.50
Southern Coke, No. 2	13.00 @ 13.35
Southern Coke, No. 3	12.60 @ 12.75
Southern, No. 1, Soft	13.00 @ 13.35
Southern, No. 2, Soft	12.60 @ 12.75
Southern Gray Forge	12.25 @ 12.35
Tennessee Charcoal, No. 1	16.50 @ 17.50
Alabama Car Wheel	@ 18.85
Coke Bessemer	14.50 @ 15.00
Hocking Valley, No. 1	16.75 @ 17.00
Jackson County Silvery	16.75 @ 17.00

Bars.—Agricultural Implement manufacturers are now in the market making their season contracts, and some large orders will be closed this week, principally for Soft Steel Bars. This class of material has been held up quite firmly, but can now be had at somewhat lower rates, and may be quoted at 1.63¢ @ 1.70¢, Chicago. The volume of business in Bar Iron is large, with prices running about as they have been, say 1 50¢ @ 1.53¢, Chicago, for base sizes. The Valley mills are reported to be uniformly quoting 1.40¢ at mill, but the manufacturers near this market are doing somewhat better. Store prices are unchanged at 1.70¢ @ 1.80¢ for Iron and 1.75¢ @ 1.85¢ for Soft Steel, the weakness shown by some jobbing houses not yet having affected the open rate.

Structural Material.—A notable contract for Beams, Columns and Girders was secured the past week by the Illinois Steel Company for the new building of the Stock Exchange, which will require over 2000 tons of this class of material. This is the largest transaction of the kind for several months and was the occasion of a sharp contest among the manufacturers of Structural Iron. The price has not been disclosed, but owing to the stringent provisions for deliveries a much better rate was obtained than recent reports of demoralization in this class of trade would give reason to suppose. The outlook for business continues good. Two very important elevated railroad schemes are now ripening and the impression prevails that they will be in shape for contracts some time this summer. One of these is for a North Side road and the other for an additional West Side road. Quotations on mill orders for Chicago delivery continue as follows: Beams, 1.90¢ @ 2¢; Angles and Universal Plates, 1.85¢ @ 1.95¢. Small lots of Beams from stock are sold at 2.05¢ @ 2.10¢.

Plates.—Orders are very light and prices are weak, even higher grades suffering from the excessive competition among manufacturers for new business. Store trade is also of a light character. Quotations on mill shipment, Chicago delivery, are as follows: Tank Steel, 1.75¢ @ 1.85¢; Shell Steel, 2.10¢ @ 2.15¢; Flange Steel, 2.25¢ @ 2.30¢; Ordinary Fire Box, 3.05¢. Store prices are as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2 35¢ @ 2.50¢; Flange Steel, 2 60¢ @ 2.80¢; Boiler Tubes, 65 % to 67½ % discount, according to size.

Sheets.—Good orders for Black Sheets have been taken by manufacturers, whose quotations for some time have been above the market. Their success in securing orders now indicates that mills are so well filled with work that extreme quotations have been withdrawn. Carload lots are quoted at 2.85¢ @ 2.90¢, Chicago, for No. 27 Common Iron. Galvanized Iron is in somewhat better demand, and consumers are urging prompt delivery. Stocks in warehouses here are in very much better shape and prepared to supply a good demand with the progress of the building season. Quotations are maintained at 70 and 10 % discount for Juniata for mill shipment, while small lots from stock sell at 70 and 2½ @ 70 and 5 %. The coppersmiths are on strike, and the demand for Sheet Copper has been very light for the past week. Small lots are still quoted at 30 and 5 % off.

Merchant Steel.—Inquiries are improving and a rather better outlook is now perceptible, but the past week was quiet, with transactions below the average. Open Hearth Machinery and Spring Steel, standard makes, continue to be quoted at 2¢ @ 2 20¢ Chicago for mill shipment, and Bessemer Tire is held at 1.70¢ to 1.75¢, with Bar Iron extras. Tool Steel is unchanged at 6¢ @ 7¢ for ordinary and 12¢ upward for specials.

Rails and Track Supplies.—There is still an absence of large orders for Steel Rails, but the demand for small lots is very steady, keeping business in a fairly satisfactory condition. Prices are firmly held at $30 @ $32, according to quantity. Iron and Steel Splice Bars are now quoted at 1.60¢ @ 1.70¢; Track Bolts with Hexagon Nuts, 2 60¢ @ 2.65¢. Considerable cutting is reported in Spikes, but open quotations are still 1.95¢ @ 2.05¢.

Old Rails and Car Wheels.—The nominal quotation on Old Iron Rails is $17.50, but dealers are bidding only $17 in view of the large stocks and the light demand from consumers. Old Steel Rails are unchanged at $11.25 @ $15, according to length. Old Car Wheels are still scarce, and sales in a regular way are made $14.50 @ $14.75. Some consumers have been able to pick up small lots at a lower price, but only by paying spot cash and accepting immediate delivery.

Scrap.—The market continues dull in the main, although for some special kinds the demand is quite good. Borings, Turnings and Stove Plate are sought by some consumers. The price of high-grade material resists the attacks of consumers and continues fairly firm. Dealers quote as follows ℔ net ton: No. 1 Forge, $15; No. 1 Mill, $10.50; Sheet Iron, $6; Pipes and Flues, $10; Axles, $21; Horseshoes, $15; Fish Plates, $16.25. Spikes and Bolts, $14; Cast Borings, $5.75; Wrought Turnings, $8; Axle Turnings, $9.50; Heavy Cast, $11 @ $11.25; Stove Plate, $8.50 @ $9; Malleable Cast, $9; Mixed Steel, $10 @ $10.50, gross ton; Leaf Steel, $17.75.

Metals.—Copper is weaker and casting brands are now down to 10¾¢ for carload lots. Lake is still held at 11¼¢, but by another week the opening of navigation from Lake Superior will effect a reduction equal to the reduction in freight rates, probably of ¼¢ ℔ lb. The Spelter producers are taking a firm stand and now ask 4 30¢ for May. The prospects of the coal miners' strike in their vicinity are considered certain. Pig Lead has been sold in carload lots at 4¢, with quotations on round lots running 3.95¢ @ 3.97½¢.

The Wellston Furnace Company say they are not the owners of the Etna Furnace; have no interest in it whatever, and are not trying to get an interest in it, consequently the statement of the Wellston *Sentinel*, reprinted in last week's issue of *The Iron Age*, is wholly incorrect.

Dyke V. Keedy, formerly of Dunham, Keedy & Co., Pig Iron merchants, has established an office in Room 6, 185 Dearborn street, Chicago. An injunction has been issued on application of Mr. Keedy restraining A. H. Dunham & Co. from advertising or publishing that they are successors of the firm of Dunham, Keedy & Co.

Boston.

Office of *The Iron Age*, 146 Franklin St., BOSTON, April 25, 1893.

The Iron market has been somewhat unsettled and uncertain here of late. The suspension of the Pennsylvania Steel Company, announced early in the week, struck the trade at a time rather unfortunate. Contractors and buyers immediately became suspicious and uncertain, and it has taken several days of quiet to restore confidence, even in part. At first there was a feeling that the troubles of the Pennsylvania Company were to be followed by other concerns and other failures were rumored. But later there is a tone of more confidence. The agent of the Pennsylvania Steel Company here, Mr. Clark, says that the mills of the company will run right along just as though nothing had happened; in other words, that the suspension has nothing to do with the Iron market, but rather that the company have orders for Rails sufficient to last them two or three months. He also states that all orders for Steel Rails will be completed according to agreement, and that he is ready to take further orders.

Pig Iron.—The market on Pig Iron is quiet here. The foundry people continue to supply the wants of a good trade, but they buy Iron at figures favorable to themselves. While doing a good deal of business really, they have the producers at

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their feet, as it were. Occasional orders for Southern Iron are being placed. The market is nominally steady at: No. 1, $15 @ $15.50; No. 2, $14 @ $15; No. 3, $14. Virginia Iron is in good request, with the market at $15.50 for No. 1. These prices on Southern Iron are for ex-dock in Boston. Pennsylvania Iron is in dull request here, with the market nominally quoted at: No. 1, $15; No. 2, $14 @ $14.50; Gray Forge, $13 @ $13.50. These prices are for Iron at shipping port. Western Iron is still in fair request, with quotations at $17 @ $18.50 for Iron delivered in Boston.

Bar Iron.—Bar Iron is in steady, moderate request for New England Iron. Negotiations for the lease of the Warr mills at Wareham have fallen through again, but lately another man is negotiating, and there is every indication that this time a trade will be closed, though it had not been consummated at the time of writing. The mill is running, however, and filling orders. It is also stated that new orders are being taken. Bar Iron is steadily quotable at: Old Material Bars, 1.60¢ @ 1.65¢ from mill; from store, 1.65¢ @ 1.70¢. Best Puddled Iron Bars are quoted at 1.80¢ @ 1.90¢ from mill; from store, 2¢ @ 2¼¢. Norway and Swedish Irons are in better request, with the market quoted at $65 @ $67 ℔ ton for Bars and Shapes.

Building Iron.—Building Iron has been more quiet for a week, from the feeling of uncertainty engendered by the financial troubles of the Pennsylvania Steel Company. The big contracts known to be on the market are still unplaced, but several building contracts embracing from 100 to 150 tons of Iron or Steel have been secured by Boston agents. Quotations are nominally but little changed, and yet it is granted that the tendency is easier. Beams and Channels, 2 05¢ @ 2.15¢ from mill; from store, 2¼¢ @ 2 30¢; Tees, 2.35¢ @ 2.45¢ from mill; from store, 2¼¢ @ 2¾¢; Angles, 1.95¢ @ 2¢ from mill; from store, 2¼¢ @ 2½¢.

Steel, Steel Plates and Steel Rails.—The claim is that Billets are pretty well sustained, but the Pennsylvania Steel Company's troubles have caused buyers here to hesitate. Agents claim steady quotations on Manufactured Steel, however: Bessemer Steel, 2 05¢ @ 2.20¢; Machinery, 2¢ @ 2.15¢; Tire and Sleigh Shoe, 2¢ @ 2 10¢; Sheet, 2¼¢ @ 2⅞¢; American Cast, 7¢@7½¢; English Cast, 14½¢ @ 15¢. The market on Steel Plates is still in the buyers' favor. A contract for about 100 tons for a penstock is mentioned, but the price was so low that the trade is loth to make it public. The boilermaker's strike, though in a fair way for settlement now, has hurt the market. Quotations are slightly easier at: Tank, 1.90¢ @ 1.95¢; Shell, 2¢ @ 2.05¢; Flange, 2¼¢ @ 2.30¢; Fire Box, 2.60¢ @ 3¢. Steel Rails are in some request for heavy, wide sections for electric roads, the most of the many new electric roads now putting down that class of Rails. But the Eastern steam roads are not buying many Rails, the reason given being that they have not an abundance of means. They will wait till after the summer travel.

Nails.—Trade in Nails is hindered by the cold, backward weather, but prices are steadily held here at $1.50 ℔ keg for carload lots, and at $1.60 for jobbing lots. These prices are for both Iron and Steel Cut Nails. Steel Wire Nails are reported to be in good demand, with prices a little stronger.

Pipe and Tubes.—There is a rather better demand for Pipe, but it comes in the way of small orders, rather than in big contracts. The market is well sustained at the slightly stronger prices noted a week ago. Boiler Tubes are stronger, since the good prospects of a settlement of the boilermakers' strike, and the market is advanced to 60 % @ 65 % off from list on all sizes.

Scrap Iron.—The position of Scrap Iron is not much changed. The fact is that the Warr mill has not yet become the buyer of the lower grades of Scrap that it was expected it would. But the chances are still good that the mill is to be run. Scrap is quoted at 55¢ @ 60¢ for No. 1 Wrought, with 60¢ @ 70¢ for best selections, including Old Horseshoes. Light Scrap is quiet at 30¢ @ 45¢; with Machine Shop Scrap at 25¢ @ 30¢ for Cast and at 30¢ @ 35¢ for Wrought.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
Bank of Commerce Building,
St. Louis, April 26, 1893.

Pig Iron.—The local Pig Iron market seems to be a trifle improved, not that prices are any higher, but the ruinous prices heretofore offered seem to be temporily withdrawn. This is explained by two reasons: first, nearly all local consumers are well supplied with stock, and, on the other hand, furnaces are well supplied with orders, so that they are not in urgent need of business. How long this will continue is difficult to conjecture. Car builders are extremely busy and have been in the market during the past week. Sales of 400 tons of No. 1 Soft and 400 tons of No. 2 Soft are reported to a car works near by St. Louis, and 300 tons of Coke Iron is also reported as being sold to a local car-wheel works. The prices at which these sales were made, while low, were not as low as the condition of the market would warrant when the sales were made, consequently the sales can be considered fairly satisfactory from the sellers, standpoint. Gray Forge is quoted at $11.25, and No. 2 Foundry at $12.25, f.o.b. cars St. Louis, at which prices sales are readily made. We quote as follows for cash, f.o.b. cars St. Louis.

Southern Coke, No. 1 Foundry,	$13 50 @	$14.00
Southern Coke, No. 2 Foundry,	12.25 @	12.50
Southern Coke, No. 3 Foundry,	11 75 @	12.00
Southern Gray Forge.....	11 25 @	11.50
Southern Car Wheel.....	18.00 @	18.75
Lake Superior Car Wheel.....	17.00 @	17.50
Ohio Softeners	16.25 @	17.00
Missouri Charcoal, No. 1 Foundry.....	13.50 @	14.00

Bar Iron.—The demand for Bar Iron, especially from car manufacturers, continues in a satisfactory condition. It is evident, however, that some mills are on the lookout for business, as prices are weaker, and we hear of some prices as having been offered that are lower than we quote below. Mills quote 1.55¢, f.o.b. St. Louis, half extras, which price would be shaded on desirable specifications. Jobbers ask from 1.70¢ to 1.80¢, according to quantity.

Barb Wire.—While the demand for Barb Wire shows a healthy and steady increase, prices are weak and inclined to go lower. Mills quote Painted at $2.20 in carload lots to jobbers, but the market is not as firm as last reported. The unusually wet season which the entire West has experienced during the entire month of April has had its effect on the demand for Barb Wire, but prices may stiffen somewhat with increased demand which is anticipated as soon as the weather is settled.

Wire Nails.—Local mills and jobbers report a fair trade for Wire Nails, but refer to prices as being weak and unsteady. There was some talk of a meeting in Cleveland last week to advance price to $1.60, that point making St. Louis price $1.75, but it is pretty generally believed among manufacturers that prices are already as high as the circumstances seem to warrant. Indeed, with Billets growing weaker it does not look like good policy to advance Nails. We continue to quote $1.70 for carload lots to jobbers.

Pig Lead.—The market for Pig Lead has eased off somewhat since our last report. Offerings for May delivery are made at 3.85¢ @ 3.87½¢, but there is very little doing at these prices. The demand will doubtless improve shortly and prices, while they are not likely to advance very fast, will probably show some improvement.

Spelter.—The movement in Spelter came as a surprise to the most experienced brokers on the street. The probability of a strike in the coal mines in Kansas was first used and then the proposed consolidation of the smelters was introduced to affect the market, the combination resulting in a sharp advance. The market is difficult to quote, but 4.15¢ @ 4.20¢, the latter for prompt shipment, is the market at the close to-day.

Chamberlain, Turney & Baird, Laclede Building, St. Louis, Mo., have been appointed sole agents for St. Louis and vicinity for the sale of "Rome" Iron, which is particularly adapted for Car Wheels, Chilled Rolls and Malleable Castings. Freight rates on Pig Iron, Wire and Wire Nails unchanged.

New York.

Office of *The Iron Age*, 96-102 Reade street,
New York, April 26, 1893.

Pig Iron.—Current business is generally reported quite light. So far as buyers are concerned there is absolutely no snap in the trade. During the last few weeks considerable quantities of Charcoal Iron have been distributed throughout this territory and Connecticut, some of the Iron going as far South as Richmond and Roanoke. It represents a part of a stock of 9000 tons held for a good many years by a Lake Superior furnace, for which at one time $34 was offered and declined. This Iron is now selling on the basis of $15.75 @ $16, Buffalo, for the chilling numbers. We quote Northern brands at $14 50 @ $15.25 for No. 1; $13 75 @ $14.50 for No. 2; $12.50 @ $13 for Gray Forge, tidewater. Southern Iron, same delivery, $14.25 @ $14 50 for No. 1; $13 @ $13.50 for No. 2 and $13.25 @ $14 for No. 1 Soft; $12 @ $12.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Quotations remain nominally as follows: $22 @ $22.50 for 10 % and $25 @ $25.50 for 20 % Spiegeleisen, and $57 @ $57.50 for 80 % Ferromanganese.

Billets.—No transactions of any consequence are reported in this market, which is, however, easier. We quote, nominally, domestic Billets, tidewater, $25 @ $25.50; foreign, nominally, $29 @ $29.50; domestic Wire Rods, $33.50 @ $34; foreign Wire Rods, $40 @ $40.50, and Swedish Rods, $52 @ $53.

Steel Rails.—Sales are confined to very small quantities so far as the Eastern mills are concerned. The suspension of the Pennsylvania and Maryland companies will not in any way affect the sale and delivery of Steel Rails from these plants, which will continue in full operation. The only question which is puzzling the trade is the attitude of the Pennsylvania and Maryland mills when the time comes for the renewal of the present arrangement. Originally this was to expire on April 1, but in the absence of some of the representatives of the largest mills, an extension to July 1 was agreed upon. Whether the receivers of the two companies named can enter into a compact like that now existing under the laws of Penn-

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sylvania and Maryland, may seem doubtful. The arrangements are such that it is difficult to ascertain before the monthly settlement whether a mill is entitled to payment for being below the allotment or whether it must pay into the pool for having shipped more than its share. It is doubtful whether the courts would justify such outlays on the part of a receiver. Standard Rails are still quoted, nominally, $29 at mill or tidewater, and Girder Rails, $31 @ $33.

Track Material.—No business of any consequence has been done. Spikes are quoted at 1.85¢ @ 1.95¢; Fish Plates at 1.50¢ @ 1.60¢; Track Bolts, square nuts, at 2.4¢ @ 2.50¢, and hexagon nuts at 2.5¢ @ 2.60¢, delivered.

Manufactured Iron and Steel.—The time for putting in the bids for the Park avenue improvement, which calls for 17,000 tons of Structural Material, has been extended to May 4. Figuring is going on in connection with a considerable number of moderate-sized buildings, but no very large contracts have been placed during the period under review. Prices continue irregular both in Structural Material and in Plates. We quote: Beams up to 15 inch, 1.80¢ @ 2.10¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.80¢ @ 1.90¢; Tees, 1.85¢ @ 2¢; Channels, 1.85¢ @ 2¢, on dock. Steel Plates are 1.80¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.25¢ @ 2.50¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock, and common 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ ℔ bundle, at mill.

Merchant Steel.— The market is dull, with Machinery at 1.75¢ @ 2¢; Toe Calk, 2¢ @ 2.25¢; and Sleigh Shoe, 1.75¢ @ 1.90¢.

Old Material.—Business has been very light. We quote: Old Iron Rails, $16.25 @ $16.50, on cars Jersey City, and Old Steel, $12.75 @ $13.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, April 25, 1893.

During the week under review there were some heavy transactions in Bessemer Pig and Steel, but at prices considerably lower than have been touched for several months. From the fact that these transactions were brought about largely by reason of concessions on the part of sellers it cannot be claimed that there has been any general improvement in the situation. News of the financial troubles of the Pennsylvania Steel Company was received here on Friday, 21st inst., and created considerable surprise in business circles, as the concern were supposed to be in good condition. As far as known, no Pittsburgh firms are affected, but the failure has added considerably to the feeling of uneasiness which prevailed here before it occurred. Loans are negotiated with more difficulty, the banks drawing the credit lines tighter than for some time past. There has not been a business failure of any consequence in Pittsburgh for a long time, and this is considered remarkable, when the low prices at which materials of nearly all kinds have been selling are taken into account.

Ferromanganese.—Demand is quiet and prices are slightly weaker. We quote 80 % Domestic at $58.50 @ $59 f.o.b., cars Pittsburgh. With two makers of domestic and foreign in the field the competition for the business offering from this district will no doubt be very active.

Plates.—Low prices and only a moderate tonnage continue to be the chief features of this branch of the trade. While the volume of business continues fairly large buyers are not pressing in their demands and makers are abundantly able to take care of all business offering and could handle considerably more should the trade require it. Prices for ordinary lots are unchanged, with the exception of Tank Steel, on which we reduce quotations slightly. We quote as follows: Ordinary Fire Box at 2.25¢ @ 2.50¢; best Quality, 3¢ @ 3.25¢; Flange, 1.90¢ @ 2¢; Tank, 1.60¢ @ 1.65¢; Shell, 1.75¢ @ 1.80¢; Universal Plates, 1.65¢ @ 1.75¢.

Structural Material. — The slightly better inquiry continues, and with the extremely favorable prices that are ruling, coupled with the fact that we are in the midst of the building season, makers expect a heavy tonnage from this time forward. At the Homestead Steel Works some improvements are under way and are nearing completion which will considerably facilitate the handling of material. It is stated that very close to 400 tons of Structural Shapes are being rolled every 24 hours at the above works. Prices have not shown any material change, and we quote as follows: Beams and Channels in ordinary lots, 1.65¢ @ 1.70¢; Angles, 1.65¢ @ 1.70¢; Z-Bars, 1.80¢ @ 1.90¢, and Tees, 1.85¢ @ 1.90¢. It is claimed that in Eastern markets even the above very low prices on Beams and Channels have recently been shaded by Pittsburgh on desirable business.

Wire and Cut Nails.—As announced in our report of last week, a meeting of Wire Nail manufacturers was held in Cleveland, Ohio, on Thursday, the 20th, and was attended by about a dozen manufacturers. The present condition of the trade and also prices were discussed, and after the views of those present had been expressed it was decided not to make any change in prices for the present. It is understood that another meeting will be held some time between April 25 and May 1, either at Cleveland or Chicago. A fair demand is ruling for Wire Nails, but as the season contracts have all been placed, makers naturally look for a lighter demand, as only the smaller trade are in the market. We continue to quote at $1.55, Cleveland or Pittsburgh, in carload lots, and $1.60 in less quantities. It is stated that among Cut Nail makers a better understanding exists as regards prices, and $1.15 base in carload lots can be considered as a fair quotation. The mills in the Wheeling district, where nearly all the Cut Nails for Western and Southern markets are made, continue in active operation and are understood to be well supplied with orders.

Bars.—The present volume of business is not up to expectations, and the fear is being expressed that spring trade will not be as large as expected. The output of Refined Iron Bars in Pittsburgh mills is growing less right along, some of the larger concerns having given up puddling altogether, while others are only doing a sufficient amount to satisfy the wants of some customers who continue to specify Iron in place of Steel. In the Mahoning Valley considerable puddling is still done, but, with the completion of the Bessemer plant of the Ohio Steel Company, the manufacture of Steel Bars will be considerably increased. Prices for both Iron and Steel continue low, with no immediate prospects of improvement. We continue to quote Steel Bars at 1.50¢ @ 1.55¢, with some mills holding out for the latter named figure. In the Mahoning Valley, 1.45¢, half extras, at mill is the ruling figure.

Steel Rails.—Nothing of an important nature has developed within the past week, but it is understood that a fairly large tonnage is being offered, no contracts out of the ordinary, however, being closed for some time. We repeat quotations of $29, at mill, for standard sections. At the Edgar Thomson mill a considerable quantity of 100-pound Rails is being rolled for use on the lines of the Pennsylvania Railroad between Philadelphia and Pittsburgh.

Pipes and Tubes.—A very considerable improvement in this branch of the trade is noted, and a recent inquiry for 6-inch Pipe sent to a number of mills elicited the information that their product was sold ahead for the next month or six weeks. The fact that a number of makers are declining to enter orders for delivery after June 1 is taken by some to indicate that a deal of some kind is going on which will materially affect the interests of those engaged in the manufacture of Pipes and Tubes. Nothing of a definite nature, however, has been divulged, and it is possible that nothing of the kind is contemplated. Discounts adopted at the meeting held in New York on the 13th inst. are as follows: Butt-Weld Black Pipe, 60 % discount from manufacturers' list; Butt-Weld Galvanized, 50 %; Lap-Weld Black, 67½ %; Lap-Weld Galvanized, 57½ %. On Boiler Tubes discounts are as follows: 2¼-inch and smaller, 65 %; 3-inch and larger, 67½ %.

Muck Bars.—A few sales continue to be made of lots ranging from 100 to 300 tons, but the prospects for any improvement in the demand for Muck Bars are not encouraging. Prices continue as noted last week, and we quote No. 1 Bars at $24 @ $24.25, f.o.b. cars, Pittsburgh.

Wire Rods.—Makers advise us that there is very little inquiry for Rods at this time, with prospects for an increased tonnage not very encouraging. The recent decline in Steel has affected the price of Rods to some extent, and we now quote at $30.50, f.o.b. cars Pittsburgh. It should be noted, however, that some makers are refusing to accept less than $31, unless for desirable business.

Sheets.—Trade continues in a satisfactory condition as far as demand is concerned, but there is considerable complaint among makers regarding prices. The fact that mills are not inclined to book largely for delivery after May 1 is expected to cause considerable activity in the demand for shipment up to that date, as buyers will naturally want to cover their requirements in anticipation of labor complications. Owing to this condition of the trade, prices are slightly firmer, and we have advanced quotations. We now quote as follows: Box Annealed Iron Sheets No. 24, 2.50¢ @ 2.55¢; No. 26, 2.60¢ @ 2.65¢; No. 27, 2.70¢ @ 2.75¢. For Steel Sheets $\frac{1}{10}$¢ over above prices is asked.

Wire.—Mills continue actively employed, principally on season contracts taken some time since, but a fair demand is going from the smaller buyers who make it a rule to buy as their needs require. Prices are reported as being firmly maintained, and we continue to quote Painted Barb Wire at 2.15¢ in carload lots, with 40¢ additional on above price for Galvanized. Plain Wire is also in good demand, with a majority of the mills considerably behind on deliveries. Prices are unchanged and we repeat quotations of last week as follows: Nos. 6 to 9, 1.70¢ in carload lots and 1.75¢ in less quantities; Nos. 10 and 11, 1.80¢ @ 2¢; No. 12, 1.90¢; No. 13, 2¢, and No. 14, 2.15¢.

Connellsville Coke.—Reports from the Connellsville region indicate that the demand for Coke has fallen off to some extent within the past two weeks, and as a result, for the week ending April 15 only 13,007 ovens in the Connellsville region were in blast, and 4320 were idle, with a

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total estimated production for the week of 122,890 tons. Prices have shown no material change and we continue to quote Furnace Coke at $1.60 in tons of 2000 lb, f.o.b. cars in Connellsville region; Foundry Coke is quoted at $2.15 to dealers and $2.30 to consumers.

Freights.—Taking effect Monday, May 8, freight rates on Pig Iron between Mahoning and Shenango Valleys and Pittsburgh will be advanced from 60¢ to 65¢ ℔ gross ton. Rates on Billets and Mill Cinder are unchanged, and remain at 75¢ for the former and 60¢ for the latter. Between Rankin, Braddock, Bessemer, Demmler, McKeesport and the Mahoning and Shenango Valleys rates on Pig Iron and Mill Cinder will be advanced from 75¢ to 80¢ on Pig Iron, and from 70¢ to 75¢ on Mill Cinder ℔ gross ton. Billets are unchanged and remain at 90¢ ℔ gross ton. On the above date, freight rates from Pittsburgh and points taking Pittsburgh rates to Eastern points will be advanced 10¢ ℔ ton on Pig Iron and Billets, the new rates to the principal points being as follows: From Pittsburgh and points in Pittsburgh territory to Boston, Mass., Pig Iron $2.80, Billets $3.10; New York City, Pig Iron $2.40, Billets $2.70; Philadelphia, Pig Iron $2, Billets $2.30; Syracuse and Utica, N. Y., Pig Iron $2.40, Billets $2.70. Also on the above date freight rates from Pittsburgh and points in Pittsburgh territory to points named below on the different classes and also on articles of Iron and Steel manufacture will be as follows:

	Classes. Rates in cents per 100 pounds.						*Articles of Iron and Steel.	
	1	2	3	4	5	6	L. C. L.	C. L.
Rochester, N.Y.	32	27	21	14½	12	11	12	11
Syracuse, N. Y..	35	30	23	17	14	12½	14	12½
Utica, N. Y.....	39	33	24½	18½	16	13	16	13
Oswego, N. Y...	39	33	28	19	16	13	16	13
Albany, N. Y....	45	39	30	21	18	15	18	15
New York City, N. Y.....	45	39	30	21	18	15	18	15
Boston, Mass....	50	43	33	24	20½	17	20½	17
Portland, Me...	50	43	33	24	20½	17	20½	17
Burlington, Vt..	60	52	40½	29	24½	19½	20½	17

*Rates on articles of Iron and Steel will expire at close of business September 30, 1893, unless sooner revoked or superseded.

(*By Telegraph, April* 26, 1 *p.m.*)

Pig Iron.—Prices on Bessemer Pig touched $13.50, Pittsburgh, during the week, and at that figure a number of transactions are reported, some for delivery well up to the close of the year. It is the impression in certain quarters that the above price can be maintained for a time at least, while if the Ore men and furnace operators could get down to business a slight recovery in prices is thought to be probable. There is no denying the fact that the advantages of the market just now seem to be with the buyers, but with Bessemer Iron obtainable at $13.50, Pittsburgh, it would be hard to advance any tangible reason why it should go lower. However, if the pressure to sell continues and the present heavy production is kept up it may be somewhat difficult to maintain this price. In Gray Forge and Foundry Irons there is only a moderate demand, with no change in price. We quote as follows:

Neutral Gray Forge	$12.25 @	cash.
All-Ore Mill.	12.50 @	"
No. 1 Foundry	13.75 @ $14.00.	"
No. 2 Foundry	12.75 @ 13.00.	"
Charcoal Foundry No. 1	17.00 @ 18.00.	"
Charcoal Foundry No. 2	16.50 @ 17.00.	"
Bessemer Pig	13.50 @ 13.60.	"

We are advised of two sales of Bessemer aggregating 7000 tons for delivery well up to the close of the year at a price equal to $13.50, Pittsburgh; also a sale of 2000 tons for May and June at $13.60, Pittsburgh, and a sale of 300 tons of Gray Forge for May delivery at $12.25.

Billets.—Some heavy transactions in Rod Billets for delivery during the last half of the year are reported as having been closed during the past week. These sales are said to foot up close to 20,000 tons, Wheeling mills being the sellers and Cleveland parties the buyers. Prices range from $22.75 to $23, Cleveland equal to $21.50 to $21.75 at makers' mill. Another transaction involving 5000 tons is pending and may be closed before the week is out. Steel for May and June commands better prices than the above and ranges from $22.25 to $22.50 at makers' mills. The fact that the mills have little or no Steel to sell up to July 1 will account for the higher prices for May and June delivery.

Dr. C. G. Hussey, a pioneer in the Copper and Steel industries, died at his home at East End, Pittsburgh on Tuesday morning, the 25th inst. For many years Dr. Hussey was connected with the firm of Hussey, Wells & Co., and Hussey, Howe & Co., large steel manufacturers of Pittsburgh and now known as Howe, Brown & Co., Limited. He was also the senior member of the firm of C. G. Hussey & Co., manufacturers of Copper, which firm has been established in Pittsburgh for many years. He was in the ninetieth year of his age and sustained an injury last week which has resulted in his death.

The Pennsylvania and Maryland Suspension.

The suspension of payments by the Pennsylvania Steel Company of Steelton, Pa., and of the Maryland Steel Company of Sparrows Point, near Baltimore, Md., has been the one topic of conversation in the iron trade during the current week. The cause of the suspension is not far to seek. The surplus of the Pennsylvania Steel Company has been spent in the creation of the Maryland Steel Company. The latter not only included the building of the plant of four furnaces, of a great Bessemer works, a modern rail mill and a shipbuilding plant, with its appurtenances of docks, shops, railroad, &c., but also the establishment of a town of several thousand inhabitants. It is stated that in all about $6,000,000 was spent on this new plant, while only $2,000,000 in 5 per cent. mortgage bonds were authorized. It cannot be stated whether even the whole of the second million was placed.

Considerable delay was experienced in getting the plant into operation, and, when it was finally started, only one serious defect developed, the soaking pits being inadequate to handle the ingots effectively for the blooming mill. The market for steel rails was so slack, however, that the necessary changes and additions were not pushed very vigorously. They are now, however, so well advanced that the Maryland Steel Company could readily produce the very large tonnage which they were originally designed to make. The slackness of the rail trade led the management to put in temporary facilities for the handling of soft-steel billets, considerable quantities of which were rolled for Eastern consumers last year.

We are informed by an officer of the company that even with their light employment, considering their capacity, the Maryland Steel Company have been making money steadily lately. In fact, the plant was originally laid out with the idea predominating that it should possess the ability to run economically and well on partial employment.

The Pennsylvania Steel Company have during the past few years pursued the policy of diversifying their product and making the Steelton plant ultimately independent of standard steel rail manufacture. The company went into the manufacture of frogs and switches, produced soft-steel billets and slabs on a very large scale and turned more recently to the structural iron trade, the building of bridges, elevated roads and roofs. Finally the work of making girder rails was taken up. It is generally known that the company went through all the trials which that particular branch is subject to, and it was only recently that the rolling of the deeper sections became successful.

All these departures involved some changes and modifications, and must have absorbed a good deal of energy and of money. In addition thereto a splendid new open-hearth plant of six 30-ton tilting furnaces is now under construction, and a great slabbing mill is being built.

While thus very large sums were being spent in extension and in renewal, the company, in spite of their long and successful career, had to go through the experiences of every new comer in a new field. To secure an entry, very low figures had to be offered as an inducement, and in some isolated cases the difficulties due to new work had to be borne.

In the meantime the payment of dividends went on. Dividends at the rate of 12 per cent. per annum have been paid, as the following table will show: 1885, cash, 4 per cent.; stock, 8 per cent.; 1886, cash, 4 per cent.; stock, 8 per cent.; 1887, cash, 11 per cent.; stock, 2 per cent., 1888, cash, 7 per cent.; stock, 5 per cent.; 1889, cash, 6 per cent.; stock, 6 per cent.; 1890, cash, 9 per cent.; stock, 3 per cent.; 1891, cash, 6 per cent.; stock, 6 per cent.; 1892, cash, 3 per cent.; stock, 3 per cent.

In 1889 of its capital of $3,000,000, only $2,767,800 was paid up. A year later it increased its capital to $5,000,000, in which $2,928,000 was paid up. In 1891 it again advanced its paid up capital and it is now $4,757,000, and February, 1892, it offered its stockholders the privilege of subscribing to the amount of 50 per cent. of their holdings to the 5 per cent. bonds of the Maryland Steel Company, issued to the amount of $2,000,000. This was in addition to the stock of this company, amounting to $1,000,000, all owned by the Pennsylvania Steel Company and representing an outlay in six years of $5,500,000 at Sparrow's Point.

The stock, which sold as high as $300 in 1889, was quoted at $120 immediately before the suspension. Yesterday 217 shares were sold in Philadelphia from $55 down to $50, closing at the latter figure.

Both works are now running and are reported to be doing a good business. They are both in a position to take, and are actually taking contracts. Whether they will be in the billet, structural and street rail trade as sharp competitors in the near future as they have been lately, the near future will quickly develop. As yet, no statement of the actual state of the affairs of the company has been made public.

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HARDWARE.

Condition of Trade.

WHILE the unfavorable weather has interfered seriously with business in some sections, on the whole it may be reported as very satisfactory in amount. There is, however, a slowness in collections, which is particularly noticeable in the South and Southwest.

Chicago.

(By Telegraph.)

Shelf Hardware is in reasonably good demand, but trade does not seem to be increasing, the weather cutting a very important figure in fluctuations in the volume of business. Last week snow fell throughout a large part of the Northwest, reaching a depth of 20 inches in some localities. This has not only checked seeding, but has also prevented most kinds of outdoor work. The season is believed to be fully a month late. Staple goods of all kinds are affected by the backwardness of the season, and weakness is visible in some unexpected quarters owing to the necessity of moving accumulated stocks. Wire Cloth is an exception to this condition, the price still climbing. Some of the trade are inclined to think that it will reach $2 before the upward movement is checked. A large order for Poultry Netting for the World's Fair buildings was placed with the Gilbert & Bennett Mfg. Company, the Clinton Wire Cloth Company and the New Jersey Wire Cloth Company, with one or two smaller concerns, amounting in all to about 1700 rolls of 48-inch netting. Considerable stir has been caused by this order, though the statement is made that it is not a full day's work for the factories, but it came at a bad season of the year, with light stocks in manufacturers' hands, and, therefore, had to be distributed among a number of concerns. The placing of this order has had no effect on prices. Heavy Hardware is moving very well. Jobbers report no particularly encouraging features except that a steady flow of small orders from day to day keeps the volume of business in fair condition.

St. Louis.

(By Telegraph.)

The incessant rains prevailing in this section during the past week have had a depressing effect on business, and certain lines of goods which are generally in good demand at this season remain neglected. The trade in Shelf Hardware has also been adversely affected. In the matter of Wire Cloth there is the most urgent demand, and prices can be quoted all the way from $1.75 to $2, according to the stock the seller has on hand. The Ludlow-Saylor Wire Company have just received a large shipment of Wire Cloth, which, together with the stock already on hand, enables them to fill all orders promptly. Wire Nails and Barb Wire are in good demand, but prices are inclined to weakness. Cut Nails are selling at about what they will bring, and we hear of some very low prices which have been made within the past few days. Considering the financial condition of the country, collections are fair and money seems reasonably easy.

Notes on Prices.

Cut Nails.—The mills are naming lower prices, although the demand is active and the volume of business large. We quote $1.15 for carload lots at mill, and in larger quantities this price is in some cases shaded. New York quotations are still $1.40 for small lots from store.

Chicago, by Telegraph.—Factory lots of Cut Steel Nails are now selling at $1.30 to $1.35 here, according to the character of the order. Specifications are coming in freely to manufacturers on old orders, but the competition of outside mills keeps prices down, while new business is rather slow on account of the broken weather. Prices from store are $1.40 to $1.45, according to quantity.

Wire Nails.—The manufacturers held a meeting last week and after a full consideration of the condition of the market adjourned without making any change in price. The makers have all booked large orders which will absorb their production for several weeks and are therefore not anxious for orders. Jobbers being generally well supplied there are not many large orders on the market, although the goods are going off rapidly into general trade. We quote without change $1.55, f.o.b. mill, with Cleveland as the point of equalization for the West and Pittsburgh for the East. Small lots from store in New York are held at $1.80 @ $1.85.

Chicago, by Telegraph.—The price of Wire Nails was not advanced by the manufacturers last week, although a strong sentiment existed among them in favor of an additional 5 cents. Some of the jobbers are still underselling manufacturers, and it was not thought expedient to make another advance until this condition of affairs should change. The opening of navigation and the establishing of lower freight rates by lake has made the factory price $1.62½ here. Manufacturers report carload orders coming in very well, but no heavy orders. Jobbers quote small lots from stock at $1.70 to $1.75, and carloads $1.65.

Barb Wire.—There is no change in the condition of this market except that, as is natural at this season, the demand is falling off somewhat. We quote $2 45 to $2.50 for Four Point Galvanized in carload lots at mill. Small lots delivered in New York are quoted at $2.70 for Galvanized and $2 30 for Plain.

Chicago, by Telegraph.—Trade in Barb Wire is very disappointing, on account of the backwardness of the season. New business is coming in very slowly, and there would be little done if it were not for the quantity of advance orders entered during the winter, on which shipments are now being made. Prices are maintained, buyers not asking for lower rates, but paying the price asked on such new orders for small quantities as they are sending in. We continue quotations at $2.20 and $2.60 for carload lots of Painted and Galvanized respectively. Small lots from stock are quoted at $2.30 and $2.70.

Wire Cloth.—This article was already becoming scarce and prices were materially stiffening when, on the morning of the 19th inst., the works of the Clinton Wire Cloth Company, Clinton, Mass., were very seriously damaged by fire, which will still further lessen the supply for some time. Prices are in consequence very strong and holders of stocks are in many cases naming prices which under other circumstances would be unreasonably high. We hear of both jobbers and manufacturers who are now holding firm at 2 cents a foot for goods from stock. Regarding the fire at their works, the Clinton Wire Cloth Company have issued the following circular under date of the 19th inst.:

GENTLEMEN.—A portion of our works were partially destroyed by fire this morning.

We desire to notify you that the Hex. Netting department, with stock on hand, is intact and there will be no delay in deliveries.

The looms for weaving Screen Cloth are uninjured, but the painting plant is totally destroyed, and we shall be unable to deliver painted Cloth until the building can be replaced.

The mill for weaving coarse Cloth is partially destroyed, but as most of the looms are practically uninjured, stoppage in this department will be for a short time only.

Very respectfully,
CLINTON WIRE CLOTH COMPANY.

Perfect Tack and Brad Hammers.—L. A. Sayre, Newark, N. J., is manufacturing these Hammers, a description of which appeared in our last issue. The Perfect Tack Hammer is sold to the trade at $3 per dozen, and the Perfect Brad Hammer at $2.75 per dozen.

Evans Garden Cultivator.—A description of this article was given in a recent issue as manufactured by the Evans Garden Cultivator Company, Paris, Mo. The Cultivator is sold to the trade at $10.50 per dozen.

Eureka Tea and Spice Scale.—John Chatillon & Sons, 85 to 89 Cliff street, New York, who are manufacturing this article, which is described elsewhere in this issue, are selling it to the trade from the following list, which is subject to a discount of 40 per cent.:

	Each.
With Brass Scoops and Brass Bails, all Nickel Plated	$9.00
With Brass Scoops and Brass Bails	8.50
" Tinned " " Iron "	8.00

The Prescott-Stanyan Bread Mixer and Kneader.—This article was described in our last issue. It is put on the market by Edwin Prescott, 8 Medford street,

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Boston. The device is made in two sizes, No. 1 with 7-quart pan and No. 2 with 8-quart pan. The trade price on either size is $3, subject to a discount of 25 per cent.

Gem Cake and Batter Mixer.—This article was described in our last issue as manufactured by North Bros. Mfg. Company, Philadelphia. It is sold to the trade at $1.75 per dozen, subject to a discount of 20 per cent.

Gem Cake Pans.—North Bros. Mfg. Company, Philadelphia, who are making this article, which was described in a recent issue, are selling it complete, including one loaf and three layer pans, measuring cup and recipes, at $1.25, subject to a discount of 20 per cent. to the trade.

Glass.—The Glass market for the past week shows few changes, the demand being moderate, and prices firm. The recent storms by which quantities of Glass was broken in some sections have caused a perceptible increase in the requirements to repair the damage done; while the same storms have necessitated a discontinuance of building operations, and curtailed the demand for Glass to be used in new buildings. There are indications that prices are stiffening, and that desirable sizes of Glass are becoming somewhat scarce. It is reported that in the new list issued by the Chambers Glass Company, the bracket prices for Glass of first and second quality are quoted from $1 to $1.50 per box higher than formerly, with discounts as adopted by the National Window Glass Company. Meetings of the National Window Glass Company are announced to take place this week in Philadelphia and New York. It is rumored that a new Glass list is in contemplation, but no official announcement has yet been made. Quotations are as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17½ cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

Sales by Manufacturers and Jobbers to the Retailer's Customers.

THIS MATTER, which has been discussed at some length in our columns, is attracting wide attention and we are in receipt of many letters from the trade in which the subject is touched upon as seen from the different standpoints of the writers. Some, it will be observed, while protesting against the injustice and demoralizing influences of this practice, regard it somewhat in a spirit of resignation; apparently feeling convinced that nothing can be done or devised that will remove the evil. Others, however, advocate the vigorous adoption of retaliatory measures by the retail trade in the way of withholding patronage from the manufacturing and jobbing concerns by whom this method of securing a market for their goods is practiced, and in several cases it will be seen that our correspondents refer to the success which has attended their efforts in this direction. The formation of a national protective association, comprising retailers in all parts of the country, is also urged as a remedy.

We take pleasure in giving below extracts from a number of letters which have come to hand. These, it will be seen, without exception discuss the question from the retailer's standpoint. There is also obviously something to be said in regard to the interests of jobbers and manufacturers in the matter, and we shall be pleased to hear from them concerning it. The letters which follow are all from Hardwaremen in the State of Illinois, in which, perhaps, the practice in question is more generally encountered than in other States:

We would suggest where jobbers and manufacturers make a practice of selling to retailers' customers that the retailer quit dealing with the firm or firms that do so. That is the plan we would adopt. We are not troubled with any such practices here by jobbers or manufacturers, and the only way for retailers to break up such double dealing is to refuse to buy goods from parties that practice such underhanded business. In our judgment, if all the retail dealers would do as suggested it would very soon break up such practices.

We note with much interest the movement of retail Hardware dealers to protect their business. We find it impossible to secure the trade of the larger and responsible contractors and builders, as we cannot cut under prices obtained by them from the jobbers. In this section, however, the worst evil is the practice of the dry goods firms using Hardware as leaders. Not selling it at a profit, but often at less than wholesale cost to retail Hardware dealers, thereby drawing custom and probable trade for their regular line at prices sufficiently high to compensate them for selling Hardware at cost or less. This, of course, is taking our line of goods for purposes wholly illegitimate. And as the custom is rapidly on the increase the future of the retail Hardware trade is anything but encouraging in its prospects.

We make it a point not to buy anything of those who cover the retail trade in our city.

We think if every one would adopt our plan, canvassing by jobbers' agents would be stopped.

It is beginning to hurt our trade to a considerable extent, and it has reached the point that the jobbers do not care whether the retail merchant buys of them or not. So you can see that it would not help us not to buy of them. I have, however, been buying of firms that will not sell to any one but the trade. I think that a protective association broad enough to cover the whole United States would be the only way to stop the evil complained of.

We have noticed a disposition on the part of small jobbers and large retailers of Chicago to reach out after trade, and in some cases have heard of manufacturers, especially in builders' Hardware, soliciting trade among the consumers, all of which is more or less annoying. Up to date, however, we have experienced no special loss of business. We can not complain of the treatment accorded us by the legitimate jobbers. We do not know of any of them who are selling direct to consumers, but have noticed an increasing tendency among manufacturers of builders' Hardware, and carpenters' Tools especially, to sell direct—the latter under pretense of introducing new goods. We have no reason to complain as yet, and hope we may not in the future, but are rather apprehensive of what may follow so much competition.

In this city and vicinity manufacturers and jobbers frequently sell their goods to carpenters. I would be greatly in favor of some method by which this practice could be abolished, as it injures the Hardware trade.

Jobbers agree to protect the retailer and then sell to any they can. I try to compete, but there is no use in trying, as I am too small a fish. —— sell direct to consumers at jobbers' prices. Not only these people but others do so who claim to do otherwise.

I have experienced considerable trouble and loss by jobbers and manufacturers selling to consumers and have made it a practice to have as little to do with those who resort to it as I possibly can. I always discourage the use of goods that can be bought from such concerns.

The retail Stove trade has been suffering and meeting with considerable loss of business by manufacturers selling to outside parties from catalogue in my section of country, which is forcing practical Stove dealers to curtail their stock and not carry the large stock of late years, and the Stove dealer is obliged to add other lines of goods to keep up, or shut up shop and go out of business. The combined Tin shop and Stove store are fast going and will soon be numbered with the past. Manufacturers are to a certain extent to blame for this. I have been 26 years in the Stove trade.

Our farmers and town people buy a good many goods from the manufacturers and wholesalers, from whom they obtain them very nearly as cheaply as we can buy them.

We have had some trouble from this source. A few of our commercial travelers are so anxious to increase sales that they are guilty of this practice.

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How to Avoid the Accumulation of Dead Stock.

THIRD ARTICLE.

By W. T. Warsop.

Buy Lightly of goods not yet introduced, for when put in stock they may prove unsalable.

Where the price is equal, or nearly so, buy goods of established reputation in preference to those said to be just as good. Salesmen soon become tired of trying to sell the new goods and hand out the goods already introduced, leaving the others to be invoiced as dead stock at the yearly inventory.

Change Samples often, selling old ones as soon as possible; even, if necessary, make a discount to induce buying.

Buy as nearly as you can only what your trade demands, thus avoiding a surplus which is liable to become damaged or soiled. But one of the firm should buy the same kind of goods.

Display Goods, making a point to have each article kept for sale sampled. Customers will always choose clean, bright goods, leaving the soiled ones to become more unsalable.

Exercise great care in selecting goods, offering the best you can at a fair price.

Advertise specialties in your local papers, being particular to call attention to special goods.

Keep a good assortment, but do not try to keep everything called for, as that is impossible and unprofitable.

Keep good help, as a good salesman will sell poor or unsalable goods better than a poor one.

Take inventory as often as once a year, noting if goods have been long on hand.

In ordering goods be explicit, thus avoiding getting goods you do not want.

When marking remnants make memorandum of size, kind or other necessary information on tag, and attach same to remnant, so that salesmen can see if it will meet the wants of customer.

When improved goods come out to take the place of others, make a price on old style that will sell them.

Before replenishing goods take a memorandum of what you have on hand, you will then know sizes or kind wanted.

Do not allow help to use new tools or other articles about the store as it injures the sale of same.

Repairs ordered but not called for or taken by customer for any reason should be tagged with name, date, size, &c., so they can readily be seen by salesmen who may offer it for sale.

Keep bargain counter for damaged articles in stock, goods to be cleaned out, or odd things disposed of. If for any reason the articles cannot be placed on counter have card printed naming article and price of same.

Damaged Goods should be put in as good order as possible and sold at less than regular price.

Seasonable goods should be displayed a little in advance of the season, thus being brought to the notice of customers.

Old stock should not be pushed back on the shelves, but should be brought to the front, making an effort to sell it first.

Goods of the same kind should be kept as near together as convenient, for if kept in several places salesmen may report none in stock, and the proprietor thinking it necessary buys more.

Don't pay too much for goods. But if you find you have done so, make a point to sell as cheaply as other dealers.

Have a regular place for surplus stock, so that when those exposed for sale are all gone salesmen will know where to look for more.

Special prices should be made on seasonable goods near the end of the season to close out.

Goods sent wrong, such as wrong in size, kind or quality, should be returned. This is better than to hold them, thinking you may sell them some time.

Export Notes.

J. J. de BARROS of Shipton Green, 112 Pearl street, New York, sailed April 8 on the "Paris" for Southampton. He will visit Portugal and Brazil, taking in points 3000 miles up the Amazon River, and going to Peru and Bolivia. He will be away from 8 to 12 months on business connected with this house, who export and import various kinds of merchandise, as well as being agent for the Red Cross Line of mail steamers under contract with the Brazilian Government. He returned from an eight months' trip in this same section last December.

Much attention is being given in Mexico to the work of draining the Valley of Mexico. Those competent to judge are said to predict it will be accomplished in two years.

Norton & Son are new loading four sailing vessels for Cape Town, Port Elizabeth and East London, South Africa, having an aggregate capacity of 4900 tons. The steamer "Bamboro," for River Plate ports, is announced to sail about May 20.

Roland R. Dennis, manager of Whitman & Barnes Mfg. Company's London office, arrived in New York from England on the "Columbia" April 8 and returned April 20 on the "Augusta Victoria." It will be remembered that this branch was started last May and placed in good working order about July 1, since which time a Paris branch has been added. Mr. Dennis says they are doing a good Russian and Scandinavian business, the general increase compelling them to double their capacity in London, on Queen Victoria street. He regrets the seeming want of knowledge or indifference of the average American manufacturer when handling matters pertaining to export In his opinion the subject of how to pack, weigh, measure, mark, ship, and all the details pertaining to the successful handling of export goods, may be dwelt on at length to the immense advantage of such as are desirous of expanding their trade. The methods applicable to domestic trade often count for little in export matters. Directions must be followed to obtain satisfactory results, or it is much better not to attempt it. A customer abroad knows just what he wants, and having for many years had his requirements catered to in foreign countries, where years have been spent gaining experience, will be suited or go elsewhere. It is time wasted to argue to him that he does not understand what he must have, and many foreign houses in New York often place orders at say 5 per cent. higher with houses who have learned to appreciate that compliance with explicit instructions means a continuance and increase of trade quite regardless of price within limits. This is because men who have with care said definitely that so and so should be done have not the time to write long letters or make extended calls to impress on merchants the fact that they meant what they said.

Massachusetts Hardware Dealers' Association.

WE HAVE already referred at some length to the formation of the Massachusetts Hardware Dealers' Association, which was organized on March 15, 1893. The second regular meeting of the association was held at the United States Hotel, Boston, on the 12th inst. Fifty-five persons participated in the dinner which followed, including a few invited guests. Hon. J. B. Sargent of Sargent & Co. made the principal speech of the evening, and his remarks were received with great pleasure and satisfaction.

The object of this association and the principles on which it is founded are indicated in the following extract from a little pamphlet issued in the interest of the association, in which are given the names of the officers and directors, together with the constitution and by-laws:

The Massachusetts Hardware Dealers' Association is intended to include in its membership all responsible Hardware dealers, both wholesale and retail, throughout the New England States.

The trade have long recognized the necessity of an organization having for its objects the establishment of closer social and business relations, to guard against fraud, and for the protection of honest dealers. These are the foundation principles of this association.

It is not intended to encourage any schemes of individuals or firms, but to consider and act upon all matters pertaining to the general welfare of the trade.

Any firm in New England who are engaged in the business of selling Hardware from their own stock, and are known and recognized as a regular Hardware house, may become a member of the association. The annual fee is $10, payable in advance. Each member of a firm is eligible for membership. Any firm may be represented by any member or employee at any meeting by presenting the secretary a proper form signed by the firm in question. The regular meetings of the association are held on the second Wednesday of each month except in the months of July, August and January, and at such meetings the members dine together. The executive committee are empowered to invite to the meetings as guests of the association gentlemen whom in their judgment it would be the pleasure and interest of the association to entertain, the expense of which is defrayed by the association.

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Waste in the Store and How to Avoid It.

SECOND ARTICLE.

By H. C. Wiseman.

THE CONSTANT STUDY of a subject, the main import of which is the caption above, will prevent many a man and many a firm from going to the wall. The writer, personally, has in mind a business acquired on a capital of $150,000, carried on for 11 years in a seemingly successful manner, the sales of which were enormous and based on a margin of profit that ordinarily would be more than safe—would be enriching. And yet that business literally leaked itself away. At the end of those years its stock was worth 40 cents. It sold finally under the hammer and did not realize 25 cents on the dollar on the original investment. It was full of leaks from cellar to garret, from office boy to president. They were never stopped, they grew, and those men to-day attribute every dollar of their loss to careless, criminal waste in the business. How to avoid it—be always on the lookout for it and know the remedy. Start at watching for small waste, and the habit will come of finding the large.

MATCHES, BROOMS, GAS, ETC.

In the store never set out a box of matches, put out a dozen or so. Set out the box and every man will take a handful. We've tried it and we now make one box go as far as a dozen formerly went. Buy a good broom, name a fair life for it, and when the old one is worn out serve the new one yourself. Tell your clerks: "There are a dozen brooms, use them," and with the most of them three will be used where one ought to answer.

Get every man in the house in the habit of turning down gas as soon as he is through with it. Two dollars a month saved for gas is a fair profit on $240 worth of goods sold in 12 months, or 10 per cent. on a $20 sale. Keep a nail box and use it—you throw them on the floor, why not in the box? Besides what we use again, we sell enough at 2 cents a pound to pay the broom account in a good sized retail store.

THE MATTER OF TYING.

Keep a twine reel and use that. Do not stop to untie knots—you cannot afford to lose the time—but cut off the knots, make a quick tie, give the reel a whirl, it is wound up and ready. Do not try to ball scrap twine,—the reel is better.

IRON SCRAPS, PAPER, ETC.

Save your iron scraps, it will surprise you to see the results of your bands alone from bundles of iron coming in. And there is your paper account. I think I am safe in saying that with all the goods that come in pasteboard boxes, it is possible to save one half that account. The pasteboard boxes are the most convenient things in the world for sending out cut and wire and horse nails. Save the large pieces of pasteboard for every day special signs, and make a contract with some factory or foundry for all your good boxes, barrels and nail kegs. You will be surprised to see how much P. and D. you can credit to that account. While you are saving—save time, too. Buy a thousand or two cheap coin envelopes for brass headed tacks, screws, cupboard catches, brads, bed spring staples, &c., they take lots of time to wrap up, and that time is money.

SCALES.

Do not economize on scales; have good ones, and have those that do not require down weight to show a pound. Your customer only expects what he buys, and with bad scales and careless clerks you cannot possibly sell over 90 pounds for what you bought as 100. There is nothing that will rob a man so successfully as his scales.

DROWN A DOLLAR.

The habit of not charging for small odds and ends is almost criminal. You cannot afford to give away goods simply because it is a screw, a screw-eye or two, a handful of nails or 6 inches of wire. They are all worth a penny or two, and it takes but a few of these good-will sales to drown a dollar beyond recall. Friendship is one thing and business is another; if goods are marked right no man respects you any more for cutting the price on them, either asked or unasked. If you do it, your clerks will. If you do not they will not; and your example more than all else will prevent their sacrificing you in their little personal friendships. Other leaks are the exposed samples of goods. Sell them off, keep them fresh. Watch the parts of goods. Keys and strikes for locks, roses for knobs, nuts for bolts, hoops for buckets, &c. If short, fill them or fit them up; keep them as near their original value as possible.

READY FOR SALE.

Cultivate the habit in the store of every one always having something to do, if only using the dust brush. Have goods ready to go out. Grass seed packages made up, nails out in 5, 10 and 20 pound lots. Your season's rubber hose fitted up with nozzles, bands and connections, and ready for sale. There are hours in a day saved in such work, and the biggest leak in any house is the time wasted by employees. These are but a few of the wastes and losses, and their remedies, that if closely watched, will certainly bring the right side of a merchant's balance sheet to the front at the end of the year.

Combination Glass List.

A COMBINATION GLASS LIST has been compiled and published by C. D. Clapp, Toledo, Ohio, the object of its arrangement being to assist the buyer in ordering and also for use in retailing Glass. The book is 4 x 8½ inches in size, bound in flexible covers. On the left-hand pages the size of A Glass is given, together with the price of each size, figured at the following discounts from the list: 60, 60 and 10; 70, 70 and 10; 75, 75 and 10, and 80 per cent. By marking the discount which is to be used for retail trade, and another discount at which Glass is to be sold to contractors, &c., a uniform selling price is insured by all salesmen. On the right-hand pages the list price per light is given, followed by the sizes of Glass, showing a combination of the different sizes that list the same. To the right of each size in the list is shown the sizes from which Glass can be cut without loss, if there are any such sizes. An example is given showing that a light 36 x 38 can be cut from 40 x 40 or 38 x 42 without loss. Single-strength Glass is thus listed from 6 x 8 to 32 x 52, and double-strength Glass from 8 x 10 to 54 x 74. It is stated that the figures throughout the book can be depended upon as absolutely correct in every respect.

The Winding Up of a Once Well Known Importation Business.

MANY of the older merchants will remember John A. McKinless, who died August 1, 1892. He was a man of very decided views, and for something like 15 years had the field in his peculiar line of business largely to himself. For 21 years he was located at 292 Pearl street, until in 1890 he moved to 98 Duane street. His stock was a study. A cardinal principle with him was never to take less than 25 per cent. profit. Rather than accept less he would keep the goods, the result being that at his death his stock consisted of a heterogeneous mass of odds and ends that had been accumulating for 23 years, including house-furnishing goods, cutlery, hardware, tinware, &c., not the least of which was a number of brass bedsteads sent him by a manufacturer some ten years ago which cost landed from $40 to $80 each, including springs. He was excellent pay, and producers on the other side, mainly in England, France and Germany, got in the habit of sending him goods that he neither had seen or ordered. Up to about ten years ago it was comparatively easy for him to sell almost anything, but others, seeing the successful business he was doing, entered the field. But while the times changed and people became more discriminating, Mr. McKinless altered not. When former customers quoted competitive prices to him given by neighbors, he told them they were the people to buy from. At his death his brother, James C. McKinless, as administrator, took charge of the business, and in nine months has worked off about $19,000 worth, which in another month he hopes to increase to a round $20,000 and wind it up. Some ten years ago Mr. McKinless invested his savings in city real estate, which proved profitable investments, so that it is estimated his estate will amount to upward of $200,000 when settled up. His brother thinks that with such a stock the ordinary auction room method would have netted not more than $6000 or $7000.

John B. Varick Company.

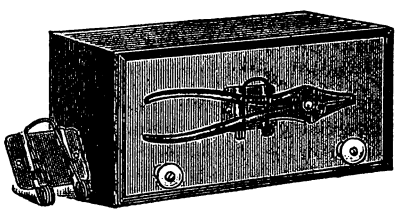
THE JOHN B. VARICK COMPANY, Manchester, N. H., whose store was destroyed by fire, have recently taken possession of their new building, built on the site of the old one. The building is five stories high, with a frontage of 37 feet and a depth of 100 feet; the entire premises occupied by the firm, including the warehouse, has a floor space of about 40,000 square feet. The building is fitted with modern improve-

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ments, and the stock includes Heavy and Shelf Hardware, Bicyles, Sporting Goods and House Furnishings. A Bicycle riding school and a machine shop, where bicycle repairing is done, are features of the establishment.

Thompson's Sample Holder.

THE ILLUSTRATION herewith given represents a Sample Holder put on the market by Massey & Thompson, Monroe City, Mo. The Holder consists of a steel plate to which an oil-tempered spring is fastened, the plate being held on the shelf by means of two round-headed screws. They are made in three sizes to hold any article to be displayed. It is remarked that among the conveniences resulting from this device is that the sample can be sold each time and a fresh one put in its place without loss of time or trouble; also that it will prevent the accumulation of shop worm samples, and will save much time and annoyance in avoiding the necessity of wiring on samples. Samples will be sent by the manufacturers upon the receipt of five cents in stamps.



Thompson's Sample Holder.

Manufacturing.

THE WAREHOUSE of the W. J. Kelley Hardware Company, at Greenville, Ohio, was entirely destroyed by fire early on the morning of April 12. The warehouse was used by the Kelley Company for the storage of their stock of Screen Doors. Their entire stock was destroyed, entailing a loss of $5000, on which there was $3000 insurance. They have issued a circular to the trade stating that while their loss at Greenville was total, they have a large reserve stock on hand at the factory, and will be in shape to fill all orders by May 1.

The Foos Mfg. Company, Springfield, Ohio, have added several new specialties to their extensive line, among which is a Corn Planter, and have made arrangements for two distinct exhibits at the World's Fair, showing their Grinding Machinery in the Manufactures and Liberal Arts Building and a large display of Farm Implements in Agricultural Hall.

The Stuart & Peterson Company, Burlington, N. J., announce that on April 17 their new plant was in operation. On March 9 the engine in their old works at Philadelphia was stopped, preparatory to their removal to Burlington. Besides large amounts of machinery and supplies forwarded by boat and rail in the usual way, 48 full carloads were transported to them. They announce that after but one month and eight days' shutdown they are again running with improved machinery and better facilities.

The Beaudry Tool Company, now located in Boston, Mass., will remove to Fitchburg, Mass., where they will occupy a new building 140 x 60 feet, well equipped with special machinery for the manufacture of Beaudry Power Hammers.

Curtis & Curtis, Bridgeport, Conn., manufacturers of Pipe Threading and Cutting machines, will add to their plant a new building 33 x 55 feet, two stories high, to be completed in July.

On the night of Friday, 21st inst., fire visited the five-story brick building occupied by J. B. Shannon & Sons at 1020 Market street, Philadelphia, two floors of which were devoted to store and stock and the three remaining floors to the manufacture of Wrought Iron work, bank railings and office fixtures, Brass Hardware, Locks, &c. The fire originated in the basement, where was located the engine and boiler, and spread rapidly by way of the belt shaft to all floors, almost totally destroying the stock and plant. The cause of the fire is so far a mystery. The stock and plant are well covered by insurance, and it is probable that the adjustment of the loss will be satisfactorily completed this week. Repairs on the building will be immediately commenced, and the firm hope to resume business there about midsummer, They are at present occupying temporary quarters at 919 Market street, with manufacturing accommodation at Eleventh and Catherine streets. They refer in warm terms to the kind assistance tendered to them by the Hardware trade of Philadelphia in the way of catalogues, price-lists, samples and other supplies necessary for the speedy equipment of their temporary store. The fire destroyed all their catalogues and they will be glad to receive other copies from the trade in their line.

The Steel Shear Factory of Clayton Bros., Bristol, Conn., was entirely destroyed by fire on the 12th inst. The loss was $17,000 and insurance $9,000. The rebuilding of the plant is now under way, and the manufacturers hope by the middle of May to be filling orders again. The capacity of the new plant will be considerably greater than that of the old in order to meet the increased demand for these Shears.

Prize Competitions

$25.00.

Prize Competition No. 22

SUBJECT:

The Best Manner of Presenting and Collecting Book Accounts.

While circumstances must in many cases regulate the manner and time of presenting and collecting accounts in a retail business, it is necessary to have rules to be followed in the majority of cases. This competition is designed to draw out descriptions of methods which yield the most favorable results. Such points as the following may be touched upon:

Should accounts be collected at stated intervals?

How should they be presented to insure prompt payment?

If in person, who is the proper one to present them?

How can this best be done without giving offense?

With old accounts do collection agencies produce good results?

Is it desirable to have local organizations and black lists?

What percentage of accounts can a concern afford to lose per year?

This competition will remain open until May 20, 1893.

Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers will be favorably regarded as meeting the purpose for which these competitions are announced.

The following prizes will be awarded:

First prize	$12.50
Second prize	7.50
Third prize	5.00

The prizes will be awarded for answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than May 20, 1893. They should be addressed as follows:

DAVID WILLIAMS,
96–102 *Reade street,*
New York.
Prize Competition No. 22.

The committee to whom the contributions in Prize Competition No. 8 were referred have awarded the prizes as follows:

First Prize of $50 to FRED. MACEY, Grand Rapids, Mich.

Second Prize of $25 to HENRY C. WISEMAN, Springfield, Ohio.

Third Prize of $15 to S. T. MOORE, Milroy, Pa.

Fourth Prize of $10 to F. W. HUFF, Philadelphia, Pa.

Other Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 19. Closing April 29.

Electrical Goods as a part of a Hardware Stock.

No. 20. Closing May 6.

A Reliable System for Securing the Correct Charging of All Goods Sold on Credit.

No. 21. Closing May 13.

The Safety Line in Credit Business.

No. 22. Closing May 20.

The Best Manner of Presenting and Collecting Book Accounts.

Another subject will be announced in our next issue.

BUCK BROTHERS, Riverlin Works, Millbury, Mass., report a largely increased demand for Chisels, Gouges, Plane Irons, Carving Tools, &c., of their manufacture, and, notwithstanding their enlarged facilities, find it difficult to fill orders with their usual promptness, owing to a lack of some sizes, but by adding still more to their working force they hope to be able to meet this demand. Quite a village has sprung up around the Riverlin Works, which employs men who have been with the firm of Buck Brothers for a period of 10 to 30 years, their sons also finding work at their fathers' trade in the same shop. They state that buyers should be on their guard and not receive goods represented as Buck Brothers' which are not stamped with their trade-mark, a buck's head, or Buck Brothers in full.

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Trade Items.

ASHLAND EMERY MILLS, Perth Amboy, N. J., after investigating the merits of Naxos Emery, have adopted it as a substitute for Corundum. This, they state, does not supplant their Turkish Emery, but with them will replace Corundum for all purposes for which Corundum is used. To avoid confusing it with their Turkish Emery, they have denominated it Naxos Corundum, which name, they remark, more fairly represents the article, as it carries a large percentage of Sapphire Corundum.

E. T. BARNUM, Detroit, Mich., in a circular letter to the trade, extends an invitation to those visiting the World's Fair to call and see his exhibit of Ornamental Wire and Iron Work. The display will include a Wire House, made entirely of Wire, filled with Ornamental Wire and Iron work, and will be located in Section H., Block 3, No. 11, in the extreme northwest corner of the Manufactures Building.

WASHBURN & MOEN MFG. COMPANY issue a neatly bound pamphlet containing handsome illustrations of the buildings at the World's Columbian Exposition, with a description of each. The illustrations include the Administration Building, Government Building, Art Palace, Machinery Hall, Agricultural Building, Manufactures and Liberal Arts Building, the Woman's, Transportation, Fisheries, Electrical and Horticultural Buildings, and the Hall of Mines and Mining. Useful information is given for visitors, also a list of the principal hotels, restaurants, railway depots, theaters, museums and fine buildings.

F. M. SLADE AND F. M. POTTER announce that having purchased all of the goods and business of the Burrows-Bosworth Hardware Company, at their No. 2 store, 1954 Euclid avenue, Cleveland, Ohio, they will carry on the Hardware business at the same place under the firm name of Slade & Potter.

SMETHPORT MACHINE COMPANY, Smethport, Pa., have disposed of the Hammer department of their business to the Buffalo Hammer Company, Buffalo, N. Y., and Mr. Richardson has no longer any interest in the former concern, having associated himself with the latter company for the purpose of carrying on the manufacture of the Richardson Tack Hammer and other articles upon which he holds patents.

THE STORE OF CAMPBELL & CARLISLE, Cambridge, Ohio, was robbed on the 16th inst. Three Revolvers and a small amount of change were secured by the thieves.

GEO. M. KENYON, 109 Endicott Arcade, St. Paul, Minn., having bought out the interest of his partner, Mr. Ramsay, is conducting the business as formerly. Mr. Kenyon is the Northwestern agent for the Tudor Iron Works, Belleville Steel Company, and the Elliot Frog & Switch Company of East St. Louis, the Ball & Wood Company of New York, and the National Machinery Company of Tiffin, Ohio.

A. L. RICHARDSON has disposed of a half interest in his Hardware business at Van Wert, Iowa, to C. A. Imhoff, the firm name becoming Richardson & Imhoff.

THE J. F. HARCOURT BLOCK WORKS, Cincinnati, Ohio, have completed arrangements for a very extensive exhibit at the World's Fair, embracing all sizes made regularly from 6 to 24 inches, inclusive, and using Rope from 1 to 4 inches in diameter. A feature of the exhibit will be the methods adopted to indicate the difference between the genuine "Harcourt Blocks" and other makes so branded.

THE NEW CASTLE WIRE NAIL COMPANY, New Castle, Pa., are sending to the trade a handsome glass paper weight with beveled edges, showing views of their plants. On the reverse side of the weight is an enumeration of their annual capacity as follows: Steel Wire Nails, 750,000 kegs; Plain Wire, 50,000 net tons; Steel Wire Rods, 60,000 gross tons; Bessemer Steel, 210,000 gross tons; Bessemer Pig Iron, 140,000 gross tons. The attention of the trade is called to the fact that Wire Nails are made there direct from the ore.

C. M. AVERY, Somerton, Philadelphia, Pa., has been appointed direct representative of N. R. Streeter & Co., Groton, N. Y. The sale of this firm's Sensible Cold-Handle Sad Irons is reported to have considerably increased during the past few months, an improvement being also noted in sales of their other goods. Mr. Avery has also been appointed direct representative of the Crandall Machine Company, Groton, N. Y., for the sale of their line of Standard Adjustable Chain Pipe Wrenches.

OUR READERS will observe among the Special Notices in this issue one in which the advertiser makes known his intention to visit Europe during the coming summar and solicits commissions from firms located in the United States. The gentleman in question is actively engaged in the Iron and Steel business, and is well qualified to represent American manufacturers as suggested.

J. M. RAYMOND of the Raymond Skate Company, Charlestown, Mass., has just returned from a six months' trip in England and France, where he has been introducing the new Raymond Safety Bicycle and the Raymond Skate. Benetfink & Co. of Cheapside, London, England, are exclusive agents for England and the Continent.

J. W. GOODELL, Burlington, Vt., has succeeded Goodell & Harding, and will continue the manufacture of his Portable Box Bander, which is patented under date March 14, 1893. We are advised that the Box Bander is proving just what is needed for banding boxes, as it prevents in large measure all danger of damage to the package in transit.

BOAS BROS., 80 Beekman street, importers of Enameled Kitchen and Housefurnishing Ware, are about to move into more extended quarters, having secured the first and second lofts at 235 Greenwich street, on the corner of Barclay street.

F. A. BOKER, the senior partner of Hermann Boker & Co., 101 and 103 Duane street, is now in this city on his customary yearly visit to the New York house, having arrived by the "Etruria" April 22. His home is in Germany, at Bonn, on the Rhine. He will be here a month or six weeks, visiting the Columbian Exposition before he returns.

JOHN ACTON has removed his factory to well-lighted and commodious quarters at 79 and 81 Washington street, Brooklyn, N. Y., where orders for his Steam Heating Specialties will be filled with promptness.

HAYDOCK & BISSELL, 12 Murray street and 15 Park place, New York, in their special notice in this issue announce a large sale of several thousand cases of Agate and Granite Ware and Blue and White Ware, seconds, by order of the Lalance & Grosjean Mfg. Company and St. Louis Stamping Company, on Tuesday and Wednesday, May 2 and 3. The auctioneers explain that the goods though sold as seconds are serviceable and very saleable and are for general use just as good as the best ware, the imperfections, it is stated, being usually almost imperceptible. The entire catalogue, with duplicates, will be sold without reserve.

FRANK J. BROWNING has bought an interest in the Hardware, Paint and Furniture business of John F. Robinson, Ware, Mass., and the style of the firm in future will be John F. Robinson & Co.

AMONG the large jobbing houses who are acting as agents for the sale of the Challenge Iceberg Refrigerators, manufactured by the Challenge Corn Planter Company, Grand Haven, Mich., are the Lee-Clarke-Andreesen Hardware Company of Omaha, Neb. This concern was omitted from the list of houses handling the goods which has appeared in the advertisement of this company in recent issues of *The Iron Age*.

Royal D. Hawley.

R. D. HAWLEY, senior member of the firm of R. D. Hawley & Co., Hartford, Conn., died on the 9th inst. He had been in failing health for a long time and wholly unable to attend to the cares of his business, his trouble being an affection of the liver complicated with other disorders. Mr. Hawley was a native of Hawleyville and removed to Hartford thirty-seven years ago engaging in the Hardware business with J. W. Royce, whose daughter he married, and to whose business he succeeded in 1860, since which time he has been actively identified with the mercantile interests of the city. Mr. Hawley succeeded in building up an extensive business, from which he derived a large income. Several years ago S. F. Cadwell and W. F. Jones, who had long been in his employ, became partners in the firm and have for some time past had entire charge of the business. Mr. Hawley, until his health was affected, was a most genial companion and possessed the happy faculty of throwing aside business cares after business hours were over. Mr. Hawley had a rather unusual hobby, in pursuing which he had accumulated one of the largest and choicest collections of violins in the country, including some very valuable instruments manufactured several hundred years since.

Trade Topics.

Good Roads.—A correspondent connected with a prominent Hardware house in this State writes as follows in regard to the effect of the condition of the roads on business, and we take pleasure in laying his inquiry before our readers, from whom we shall be pleased to hear on the subject:

In looking over your paper of March 16, reports from your correspondents, I notice from Boston, St. Paul, Philadelphia and Chicago references to the bad condition of the public roads and the effect on business, pertaining to orders and collections. It occurred to me while reading these various letters that if you would address a letter to some of your correspondents in different parts of the country, asking for opinions as to the effect of good or bad roads on business, it might bring forth information that would prove interesting and valuable to those generally or especially interested.

Location of Office.—We are in receipt of the following inquiry from Malone Collins & Co., Geneva, Ala., which we take pleasure in referring to our readers.

We are building an L-shaped addition, 160 x 26, to our store and have received so many helpful hints from your paper that we would be pleased to have you, through your columns or otherwise, give us some suggestions as to the most convenient office arrangement for a general store, 56 x 130 feet, one floor.

Hard Questions.—Some examples were given in a recent issue of unusual inquiries for goods which Hardwaremen sometimes encounter. Their publication has called out the following letter from a Massachusetts Hardware house, which will be of interest:

Reading "Hard Questions" in *The Iron Age* of March 30 put us in mind of one of our fastidious manufacturers asking the other day for "1 dozen 12-inch flat Illegitimate Files." This was not a puzzler, but it pleased us a little.

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After Mexican Trade.

By Wm. H. Maher, Toledo, Ohio.

VIII.—Openings for Manufacturing.

I AM VERY FIRMLY of the opinion that now is a good time to start manufacturing enterprises in Mexico. The time to buy is when every one is desirous to sell. The time to sell is when every one wants to buy. The time to gain favors is when favors are to be had for the asking, and the favorable time to start manufacturing is when those in authority are seeking to have factories established.

This is the present condition of affairs in Mexico. The men at the head of affairs, President Diaz, his cabinet and the various State authorities are men of enterprise and foresight. They are desirous of building up the industries of their country, and they are in the frame of mind to lend every help in their power to any one who will cast his lot with them.

In the States this would mean little ; in Mexico it means a great deal. Exclusive privileges are given there for a term of years to manufacturers in various lines, and can be had by those in other lines.

Special tariffs have been made for encouragement of a new industry, and can be had for other goods.

The feeling is in the air that enterprise, and particularly enterprises backed by foreign capital, should be encouraged, and it is encouraged by everything those in authority can do ; their power is almost absolute.

This being the case, men who are seeking new and profitable fields for manufacturing may wisely turn their attention toward Mexico, for the time is propitious.

The next question well may be : What of Mexican labor? In these articles I have mentioned the wages paid in various factories. Common laborers in the iron foundry, the smelter, the cotton mills, working 12 to 14 hours per day, receive 37½ cents. Carpenters, masons, mechanics of various kinds are paid 62½ cents per day. The best native skilled labor can be had for 75 cents to $1 per day.

I always inquired of the manager of every plant his opinion of the native as a workman. These managers and foremen are usually Americans. They always spoke favorably of the men. They are wiry, work persistently and uncomplainingly, do as they are told, and are not stupid beyond power to learn. Their one fault is that they like to lay off for a day or two semi-occasionally, and do not realize that this is any sin or inconvenience.

There are no "unions," no brotherhoods, no combinations of laborers, nor likely to be. These people have been hewers of wood and drawers of water for centuries, and accept their condition uncomplainingly. In all of Mexico but the lowland the climate is healthy, and the conditions for manufacturing are superior to those in our country of severe winters and widely varying range of heat and cold. Taxes are not excessive; rents seemed to me to be very low; and I have no doubt but that concessions could be gained by which taxation would be waived for a term of years.

Let me now mention some of the enterprises that I believe could be profitably started in Mexico.

My notes show that all the glassware used in Mexico is imported. I think there is one window-glass factory there. But bottles are brought from Germany and the United States. So are lamps, lamp chimneys, table glassware, &c. The duty on these goods is very high, giving ample protection to a home factory, and the demand for the goods could be encouraged and increased.

The superintendent of the Gulf railroad said to me that there was a grand opening for a good wagon factory in Mexico; that he would like to put some money into such a factory with practical men. The duty on a wagon is twice the cost in the States. Hardwood on the Gulf & Monterey Railroad is almost inexhaustible. (Note the fact that some of the ties on that road are ebony!) Wagons are little used now because so expensive, but would at once become popular at a reasonable price and made especially for the home market, while catering to local prejudice and notions.

The commonest wrapping paper sells for 10 cents per pound in Mexico. There is a profitable field there for a paper manufacturer. On the "Orizaba" to New York was a gentleman coming North to buy machinery for a paper mill to be started in Yucatan, using the pulp of the sisal leaf for raw material. He had secured an exclusive right for ten years from the State authorities, and had contracted at hemp mills for the pulp at $5 per ton. This gentleman has been ten years in Mexico, and said to me that Mexican laborers are teachable; not so fast or so intelligent as American help, but good and very cheap.

Furniture factories are needed in Mexico. The well-to-do people delight in good furniture. Prices of imported goods are "out of reach" and out of reason. The high tariff makes even common furniture a too expensive luxury. While learning of the native working man as a working man, I heard incidentally of a concern in Mexico that started 15 years ago, with less than $10,000, to make furniture. Every man in its employ is a native except two foremen. The concern is now very rich, and rich for Mexico means real rich. Its foreign woods were admitted free, and the tariff on manufactured goods made almost prohibitive.

I heard of a wire nail mill either being built or about to be built. Mexico is not a country where many nails are used. Men tie up staging when building or painting, not to save nails, but probably to save the poles and scantling, as these look as if a century old. But the staging is tied so that it is as firm as masonry.

Pressed tinware is in great demand all through Mexico and the demand will increase. There is a good field for cheap tinware there, and I know of no one line in Hardware that apparently has so good a market prepared and waiting it.

The bicycle and tricycle business will boom in Mexico in the next few years, just as it has in the States. Girls are kept so carefully secluded that I doubt if they will join the procession, but the Mexican boy is a rider by nature and the tricycle or bicycle will captivate him. A good opening is there for the manufacturers of these goods, and wheels could be imported until the manufacturer could make them and the frames in his own shop.

Wool is raised in Mexico, and woolen goods pay a high duty, yet I saw no woolen mills in the republic. The common people wear cotton mostly, and not much of that, but there must be a large amount of woolen goods imported there.

Although the sisal fiber is raised exclusively in Mexico rope of all kinds is imported, and mostly from the States. There must be a large amount of rope of all sizes used in mining and carrying freight up and down the mountains, and a rope factory ought to be a good investment.

Outside of manufacturing, and in the way of profitable investment there is probably nothing in Mexico which offers so promising a future as coffee.

I met a gentleman in the City of Mexico who was negotiating for New York parties the purchase of a tract of 350,000 acres of coffee land at less than 30 cents per acre, and on ten years' time.

I was told of a sale of nine square miles of coffee land near Tuxpan, on the Gulf, for $2500 for the tract. This was in Mexican money, too.

On the steamer "Orizaba" was a young Englishman who had been a resident of Mexico four or five years—part of the time at work in the Anglo-Mexican Bank, and the last two years civil engineering and prospecting. He had been all over the lower half of Mexico, and told me he was on his way to England to secure capital to invest in coffee lands ; that in coffee there was a grand opening. Here are points that he gave me :

The coffee grown in the State of Vera Cruz commands the very highest price of any coffee in the world. Land and labor are both cheap. The climatic conditions are perfect. There is no danger of overdoing the business, as consumption is growing proportionately faster than production.

Coffee can be grown for 8½ to 11 cents per pound delivered at the dock. The price for five years past has averaged 23 cents. Mexico exported $6,150,358 worth of coffee in 1892, and of this the United States bought nearly 95 per cent.

The above is as I heard the Englishman deliver it, but a Mexican official told me that the actual cost of raising coffee in Oaxaca was 9 cents : that sales were made at 27 cents, and that land was advancing in price. The most favorable locality is 40 to 60 miles back from the coast, and an elevation of 3,000 to 4,000 feet. I have gone into coffee rather more in detail than I intended, but it appears to be a very inviting field for investment at the present time.

I do not claim to have seen all of Mexico, or to have a profound knowledge of business conditions there. No one will look upon these suggestions as being more than hints and surface indications, which a closer study might modify or reverse. Of this I think I may claim to be confident—that the present is an excellent time to look over Mexico if one is seeking a new business field, and if a study of his special line is encouraging it is a favorable time to get concessions and assistance from the authorities. I believe Mexico is emerging from an industrial night and will progress rapidly in the next ten years.

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How to Keep the Store Neat and Clean.

SECOND ARTICLE.

BY F. F. GILMORE.

THE CHIEF REQUISITE is that the proprietor should be a man of judgment, clear ideas, and withall of a kindly nature. This latter characteristic will impart a feeling of ambition to the clerks to keep things in shape out of respect to the head of the house. A clerk is necessarily somewhat of a machine, but if he feels that consideration is shown him, he will unconsciously grow to the idea that his employer's interests are his own, and in this way be willing and anxious to use all means of preventing confusion in the stock and accumulations of litter about the floor. The stocks will be put back carefully, each piece of display goods will be kept arranged properly and the shelves show a neat appearance.

Of course, as first set forth, the merchant or his manager will have to embody the principles of neatness. Some men are born so, others achieve it by hard lessons, other storekeepers buy it, and have to pay dearly for the luxury.

MANY ORDERS ARE LOST.

The impression made upon a purchaser when entering a store by a trashy floor, unkept and mislaid stock, is anything but prepossessing, and many orders are lost by permitting the front part of the house, in both jobbing and retail business, to be used for packing and unpacking goods. It is very well to show in this way what a busy set of clerks one has, or what a big volume of business is being done, but many buyers hesitate to enter such a pandemonium. It is well to show the busyness of the clerks, but let them carry to a rear room the goods to be packed, and bring from there the new goods, bright and clean, to be neatly placed on the shelf or stowed in bins and cellar.

Every store should have a large, rough mat at the door to prevent bringing into the house mud, dust, &c. The doors to the different stock or display rooms should be kept shut. Change of temperature, or rather, the varying of wet and dry atmosphere, badly affects fine goods, and then, when one department is swept and dusted, the settlement should not accumulate on the other stock. And in the matter of sweeping and dusting, great art can be displayed, and no wise clerk or good porter should object to being thought effeminate in the discharge of this part of the work. Clerks should take pride in keeping their stocks clean and attractive, and notice of credit as well as fault-finding, should be shown by the proprietor.

THE MOST CONVENIENT PLACE.

Wherever sprinkling can be done on the floors it is probably the quickest means of allaying and preventing dust in cleaning up, but wet sawdust is nearly as handy and much better adapted to a Hardware house, as the floor is not wet much and not so much evaporation is given off. Out on the street or pavement is the most convenient place to deposit the sweepings of dirt, litter, scraps of paper, &c., but the fire place or ash barrel is a far more decent place to get rid of them.

Where it is possible it will be found very serviceable to have curtains of light material to hang in front of shelving from the ceiling while the sweeping is going on, and to hang these from Saturday evening until Monday morning. And as the force of clerks should be in reality a trained body of men or boys, they could easily put away the curtains in short time and dust their stock over, and at night, cover them up again; and as each stock should be looked after by a certain clerk, it will not be a hard matter for him to put away and collect his goods that were scattered by other salesmen showing customers around.

THE MOST ATTRACTIVE FEATURE.

It should be a rule, too, for the clerks or salesmen who go around with the buyers, and necessarily take down and handle many sensitive goods, to go back and put away those articles; and the proprietors and their "bossy" sons, should be willing to show this amount of consideration themselves.

The show windows of a large house should be the most attractive feature of the building, and under the constant care of a man who thoroughly understands art in exhibiting goods. The displays should be constantly changed to represent the needs of the various seasons and changes of weather. The windows should be kept scrupulously clean, and have glass between the display goods and interior of store. It will pay to burn a gas jet day and night in these, turned down and out of sight, to prevent the condensing of moisture on the glass and goods.

Although it may be a good idea to receive and ship many goods through the front part of the house, to keep before the public and visitors the thrift and volume of business done, yet in most cases it is best to let the goods go out of a side or rear door.

Let the proprietors be polite and considerate to the clerks, appreciating neatness and original ideas, giving some leaway to the developments of the future merchants and yet demanding or rather requiring promptess and dispatch, and there will be found very few young men who would not consider it an honor to be connected with such a firm.

A Mexican Trip.

E. F. DE GARMENDIA of Thebaud Bros., 85–87 Broad street, exporters and importers to and from Mexico, Central and South America, returned from a trip through Mexico in connection with the business of his house. He left New York January 7 and arrived here April 2. In his opinion business in Mexico can be improved in some respects, while he found, so far as American enterprises were concerned, that our countrymen were gaining ground and improving their opportunities. He found a great many Americans there, and at one point met the body of American manufacturers who were looking up Mexican trade last February. He said they were banqueted and feted and treated royally. The prospects for large exportations of corn from the United States into Mexico are assured, as much of the crop there has failed. He remarked that the Mexican Government is using every effort to have the Tehuantepec Railroad from Coatzacolcos, on the Gulf of Tehuantepec, on the Pacific, finished this year. He referred to the fact that much coffee is being planted at Cordova and vicinity, between Vera Cruz and Mexico City. This enterprise has been started to supply employment to many who have heretofore worked in silver mines, which have become unprofitable and been abandoned.

The Coldwell Fair Exhibit.

THE COLDWELL LAWN MOWER COMPANY, Newburgh, N. Y., have completed their proposed exhibit to be shown at the Columbian Exposition. One of the principal features of the exhibit just completed will be a miniature lawn, similar to the one invented by Mr. Coldwell for the Paris Exposition, only this one is larger and made on a more elaborate scale. It is so arranged that the front has the appearance of a Plate Glass window, and on looking out of or through this window a beautiful landscape meets the eye. In the foreground is a gently sloping terrace, then comes a large tract of level lawn, standing on which is a handsome young lady, actually mowing with a Nickel-Plated Mower—an exact counterpart of the large machines made by this company. Near by there is a wide space of rolling lawn, which terminates with a steep bank running down to the river. The background shows a finely painted picture of river and mountain scenery. Altogether the picture represents a very beautiful and natural view.

The chief feature of the exhibit, however, is a large Lawn Mower. This latter arrangement is the scheme of W. H. Coldwell. It is an exact counterpart of a regular "Imperial" Mower, built to a scale of 1 foot to 3 inches—therefore, just four times as large as the ordinary mower and is, it is stated, the largest Lawn Mower ever made. Some idea of its size can be formed when it is remarked that the driving wheels are 40 inches in diameter, and the revolving cutter is over 2 feet in diameter. The handle is about 16 feet long. This Mower will be raised on a pedestal about 10 feet high, and can be seen from any part of the exhibition building. The Mower will be in actual operation, and the large revolving knives will serve as a fan to keep up a breeze. The application of the motive power is likely to be a mystery to the uninformed, and will be applied in such a way that it will require a mechanic to solve the matter.

Aside from these two special features of the exhibit there will be displayed a full line of the company's hand and horse Mowers. These will all be finished the same as the goods that are offered for sale by the Coldwell Lawn Mower Company, who have the reputation of finishing their goods in a very attractive manner.

A large number of the Coldwell Lawn Mowers were in use on the exhibition grounds last season, when the authorities were cultivating the lawns. Beside the manufacturers' own exhibit one of the

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company's largest customers will have a line of their Mowers exhibited outside of Horticultural Hall.

Thomas Coldwell will supervise the arrangement of the company's exhibit and spend some time in Chicago. But as the company has two large houses in Chicago selling their Mowers, the business will be looked after by them and an attendant when Mr. Coldwell is absent.

Biography of a Yankee Hinge.

THE STANLEY WORKS, New Britain, Conn., and New York, have issued a unique pamphlet relating to their Corrugated Steel Strap and T-Hinges. The cover of the pamphlet is in the shape of a 6-inch heavy Corrugated Strap Hinge, on which is a picture of the same. On the inside of the front cover are quotations showing the value of Steel for this purpose, and which are as follows:

"The gate self-opened wide,
On golden hinges turning."
—*Milton.*

"Here's more attractive metal."
—*Shakespeare.*

The pages are enlivened by interesting little sketches in color, which are emphasized by the text, which brings out the desirable qualities of the goods. A few copies of letters received from leading Hardware dealers are answered, showing their experience with Corrugated Hinges. At the end of the book a tombstone records the demise of "ye ancient T-Hinge and his wife, Antique Strap, who contracted a severe illness on the day their son, Stanley Corrugated, was born."

Price-Lists, Circulars, &c.

UNITY DOOR CHECK COMPANY, Chicago, Ill.: Combination Door Check Bolt and Bumper. An illustrated descriptive circular gives a price-list of these goods in various metals and finishes. Among the advantages claimed for this article are the following: It holds the door firmly in any position, open or closed; it can be set or released with the foot without stooping, and it is operated in an instant.

THE S. OBERMAYER COMPANY, Cincinnati, Ohio: New Improved Peerless Plumbago, Foundry Facings, Supplies and Equipments. The manufacturers state that the Peerless Plumbago can be used wet or dry, either on loam or dry or green sand molds for heavy or medium weight castings, and is applied with a camel's hair brush or with the hand.

MCCALLIP FENCE & WIRE WORKS, Columbus, Ohio: Wire work for churches, schools and public buildings, Wire Elevator and Office Inclosures, Desk and Floor Railings, Window and Stable Guards, &c. An illustrated circular shows Office Railings, Iron Chairs, Wire Trellis, Flower Stands, Tree Protector, Wire Lawn Fence and Wrought Iron Fence.

THE MCCUNE CYCLE COMPANY, Boston and Everett, Mass.: The McCune Bicycle. An illustrated circular describes the machine, also calls attention to its special features. The machine is fitted with double tube tire, and an extra inner tube is furnished with every wheel. The crank key, it is stated, can not be spoiled with a hammer. The brake and brake rigging are of aluminum, the frame is finished in maroon, and the rest of the machine nickeled.

THE W. J. KELLEY COMPANY, Greenville, Ohio: Unxld Lawn Mower. The points of excellence claimed for this Mower are fine quality of material and finish, simple adjustments, no clogging with grass, smooth cutting and lightness of draft.

F. E. MYERS & BROTHER, Ashland, Ohio: Spray Pumps. Illustrations are given showing the adaptability of Myers' Spray Pumps to different uses; also of their Bucket Brass Spray Pump, Spray Nozzles, Cyclone Tank Pump, &c.

IMPERIAL RUBBER COMPANY, New York: Mechanical Rubber Goods. Illustrations, descriptions and prices are given of Belting, Hose, Tubing, Packing, Brass Fittings, &c. The company are also agents for Munson Leather Belting, Albion Flexible Gas Tubing and American Steam Packing.

IN THE UNITED STATES CIRCUIT COURT at Pittsburgh last week the National Wringer Company filed an answer in the suit brought by the Erie Wringer Mfg. Company, through its receiver, A. Y. Smith. The original bill states that the defendants infringed upon the claimants' patent. In their answer the National Wringer Company claim that the Erie concern were sold on January 29, 1892, and the respondents bought the patents after they had passed through several hands, and they claim they had permission to manufacture the Wringers.

AMERICAN STAMPING COMPANY, 104 and 106 John street, New York, with factories in Brooklyn, N. Y., and Portland, Conn., have recently commenced the manufacture of American Galvanized Iron Ash Cans, to the quality of which they refer. They are put on the market both with and without hardwood staves.

CHARLES MERRILL, one of the oldest Hardware merchants in New York, died Friday afternoon, April 21, at the home of his son, Edward N. Merrill, in Brooklyn.

It Is Reported—

That the Western Hardware Company have commenced business at Salt Lake City, Utah. It will occupy the building formerly tenanted by the E. C. Coffin Hardware Company. E. C. and M. H. Coffin and Wm. Smythe have an interest in the business.

That J. Milford Morgan, Hardware merchant, Taylor, Pa., has purchased the Reinhardt Building and will shortly occupy it.

That the Wheeler Brothers of Palouse, Wash., are arranging to open a Hardware store at Cottonwood, Idaho.

That George H. Church, Hardware merchant, Elba, N. Y., is desirous of disposing of his stock.

That Gaynor & Hawkinson, Hardware dealers, Grove City, Minn., have dissolved.

That Pugh & Goodman, dealers in Hardware, Waseca, Minn., have been succeeded by Goodman & Roessler.

That J. A. Yates, of Amsterdam, N. Y., will remove to Glen, where he will conduct a Hardware store.

That Young & Tuttle, Hardware dealers, North Berwick, Me., are erecting a storehouse upon one side of their establishment.

That the Portz Hardware Company, Fostoria, Ohio, have become the Alcott Hardware Company.

That the store of J. S. Annan & Bro., Emmitsburg, Pa., was robbed on the 15th inst. Knives, Razors and Scissors comprised the booty.

That the Burhans-Black Hardware Company, Syracuse, N. Y., which were recently incorporated, have chosen Colonel H. N. Burhans for president and treasurer, and J. William Black, vice-president and secretary. P. J. Mack, the Hardware dealer at 312 South Salina street, has united his interests with the company. Mr. Mack has become one of the stockholders of the company, and will continue to manage his old store under the style of P. J. Mack & Co.

That F. H. Canaris, Hardware merchant, Long Beach, Wash., has sold out.

That the Consolidated Implement Company, T. G. Morris, manager, Idaho Falls, Idaho, have added to their large Implement business a full line of Shelf and Builders' Hardware. It is intended to put salesmen on the road and supply surrounding territory. Mr. Morris was formerly with the Studebaker Mfg. Company, and owns the sole right to use the Morris Improved Pole.

That R. A. Monroe, having purchased an interest in the Liberty Hardware Company, Middletown, N. Y., the firm style has been changed to the Monroe & Buckley Hardware Company.

That the Montana Hardware Company, Lewistown, Mont., have recently added largely to their stock and now carry a very full line. There is a great increase in business in consequence.

That the Great Falls Iron Works, Great Falls, Mont., have added a full line of Builders' Hardware and Shelf Goods to their former stock.

That the Hardware store of J. W. Clark, Ashley, Ind., was entered by burglars April 5 and $90 worth of Cutlery, Revolvers, &c., stolen. The store was also visited by thieves on the 12th inst., when the safe was blown open. There was fortunately no money in the safe but it sustained damage to the extent of $75. Ashley has no protection in the shape of a night watch.

That Fred. Kroner, wholesale Hardware dealer, La Crosse, Wis., was obliged to have his foot amputated a short time since to prevent possible spread of blood poisoning. He is in a critical condition and his death is feared.

That the store of Landon & Roberts, Hardware dealers, Winona, Minn., was burglarized recently of a considerable quantity of Guns and Cutlery.

That P. Yegen & Co., Billings, Mont., are building an addition to their store 25 x 100, and will add a line of Hardware to their general stock.

That the Nebo Hardware Company, Nebo, Ill., have removed to Roodhouse.

That the Hardware store of L. H. Reynolds, Central City, Neb., was robbed on the 7th inst. The goods stolen included Revolvers, Knives and Razors.

That the Biwabik Hardware Company, Biwabik, Minn., have just completed a fine store.

That the Hardware store of Jay Wright, Syracuse, N. Y., was damaged by fire on the 7th inst.

That N. S. Hoyt is purchasing goods for his new Hardware store at Amesbury, Mass.

That Garrett & Lyon, dealers in Hardware, Stoves and Tinware, Red Bluff, Cal., have been succeeded by Lyon & Garrett.

That Fluke & Wilcox is the style of a new Hardware concern at Bardolph, Ill.

That Carlson & Tornell are a new Hardware and Implement firm at Pilot Mound, Kan.

That the Hardware store of J. L. Herrmann at Cumberland, Md., was destroyed by fire recently.

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That J. P. Moffat has entered the Stove and Tin business at East Palestine, Ohio.

That G. C. Eddings has retired from the Hardware and Stove business at Ashland, Ore. Kenny & Provost will hereafter conduct the store.

That J. M. Morrow & Co. are a new concern dealing in Hardware, Wagons and Agricultural Implements at Washington, Pa.

That C. E. Storm has sold out his Hardware, Stove, Gun and Implement business at Plainfield, Wis.

That Bucher & Leas, Hardware merchants, Altoona, Pa., have dissolved partnership. Bucher & Elder are successors.

That the Cumberland Hardware Company's establishment at Cumberland, Md., was destroyed by fire on the 6th inst.

That the Stove store of William Donovan, Skowhegan, Me., was gutted by fire on the 11th inst. Loss, $2500, covered by insurance.

That the firm of Kendall & Higgins, Hardware merchants, Waltham, Mass., have dissolved partnership by mutual consent. J. A. Higgins will continue the business.

That burglars entered the Hardware store of Kresch & Fanger, Celina, Ohio, on the 4th inst., by breaking down the back door. They stole 15 boxes of Razors, a dozen Revolvers, and other goods.

That the Lowell Hardware Company have been organized at Janesville, Wis., with a capital stock of $25,000.

That Wm. H. Guston, Albion, N. Y., expects soon to transform his Tin shop into a Hardware store.

That the Whitten Hardware Company are fitting up a new store at New Castle, Pa.

That the Benepe Owenhouse Company of Bozeman, Mont., have added to their Implement business a general department store, including a full line of Builders', Shelf and Heavy Hardware. The capital stock all paid up is $100,000.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

In this branch of trade, as in many others that are more or less directly affected by unseasonable weather, the movement of goods has been somewhat disappointing. As a matter of fact, the week under review has been a somewhat disappointing one as far as general distribution is concerned, while competition for custom has kept prices irregular, rather weak in some departments, and tended to make more general the hand-to-mouth plan of operations by jobbers and retailers. With outlet thus rather disappointing competition has sharpened and it is the exception that close buyers do not secure special favors of one kind or other.

White Lead.—The situation is precisely the same as it was a week ago. Business has been good considering the unfavorable weather for outdoor work and the restraint of tight money upon building operations and other work in various other lines in which Paints are largely consumed. Competition continues keen, however, with the effect of keeping prices somewhat irregular, more particularly in jobbing quarters and among manufacturers who are not inclined to follow in the path beaten out by the National Lead Company. No radical changes in prices have taken place during the week under review

Red Lead and Litharge.—Large consumers, such as glass makers and rubber manufacturers, have placed very good orders for the class of product used in their lines, but business otherwise has been on a moderate scale and the general demand is quite as spiritless as it has been at any previous time during the past three or four weeks. Prices are slightly irregular, but show no radical change.

Zincs.—There is no new feature in the market for domestic Oxide. Deliveries to grinders on quite a large scale and distribution in other directions is well up to the average, making a good general movement that keeps prices steady. Foreign Oxide is unchanged in this market, but higher prices are advised from the primary sources of supply and an advance here ere long is not improbable.

Colors, &c.—In Dry Colors there has been a fair average business, and Oil Colors have moved out very well also. The volume of trade hardly meets expectations, but proves sufficient to prevent any marked change in prices. As a matter of fact, prices are quite steady all along the line.

Miscellaneous.—Block Chalk is unchanged and former prices prevail for Whiting and Putty, although business is rather slow. Clays generally have been in somewhat better demand, but show comparatively little change in price.

Oils and Turpentine.

Business in all branches of the market for Animal and Vegetable Oils has been rather slow, and the demand has dragged listlessly in the absence of greater urgency in trade and almost complete withdrawal of speculative interest. Speculation in Lard and inferior Greases has ceased to figure with any prominence as a factor in governing operations or prices, since the majority of dealers who were influenced thereby latterly have more cause for regret than satisfaction. There are no really new features. Business is at present on strictly conservative lines and moderate, all told.

Linseed Oil.—Comparatively good sales have been made of Oil for prompt delivery, and in a few instances contracts involving deliveries 30 to 60 days ahead were also noted, making in all a volume of business quite up to the average for this season of the year. Irregularities in prices of Oil made outside of this city are less numerous than they were early in the month, and 50¢ for Raw Oil is, apparently, a very close figure in this market at the present time.

Cotton-Seed Oils.—Dullness has been the conspicuous feature of the market for this class of Oil during the past week, and with it a rather lower level of prices for all but exceptionally high-grade product. At the close the best prices were 39¢ @ 40¢ for prime Crude, 32¢ @ 35¢ for off-grade ditto, 45¢ @ 46¢ for prime Summer Yellow, 40¢ @ 43¢ for off-grade ditto, and 48¢ @ 49¢ for prime Summer White in round lots.

Lard Oil.—Business has been very slow and market value is mercurial, depending as it does in a good measure upon the manipulations of speculators in the raw material. For the present, values are on the basis of 80¢ @ 82½¢ for strictly prime quality.

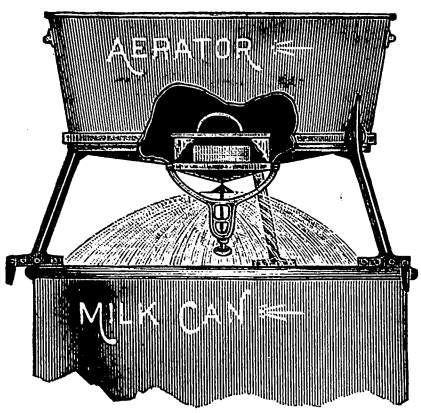
Fish Oils.—There has been no change whatever in the market for Crude, Sperm, Whale or Menhaden Oils, and the manufactured products are moving out in merely routine way at the former line of prices. Cod Oils are also rather slow, but, such as it is, the trade passing is at stiff prices.

Mineral Oils.—A fairly good business is reported by manufacturers. Low cold test Oils are a trifle irregular, as also are Paraffine, but cylinder and neutral filtered remain very steady.

Spirits Turpentine.—Demand has improved sufficiently to make considerable impression upon the supplies of receivers in this market. Prices are therefore firm, with up to 33½¢ @ 34¢ paid for regular, and 34¢ for machine barrels.

Baird's Cooler and Aerator.

A. M. Coon, Leonardsville, N. Y., is introducing the above article, as illustrated herewith. In operation the pressure of milk falling on a small wheel with reaction buckets causes the wheel to revolve, while a set screw under the wheel allows the pressure to be increased or diminished, causing the wheel to run fast or slow, according to the number of milkers. The point is made that this arrangement dispenses with the necessity of perforations in the bottom, and that all the parts being detachable and thoroughly tinned renders it easily cleaned. The manufacturer claims that the device thoroughly removes all animal heat and gases from the milk and reduces to a minimum



Baird's Cooler and Aerator.

the labor of properly caring for it, as it is considered by experts that thorough aeration of the milk is necessary to obtain the best product of butter and cheese.

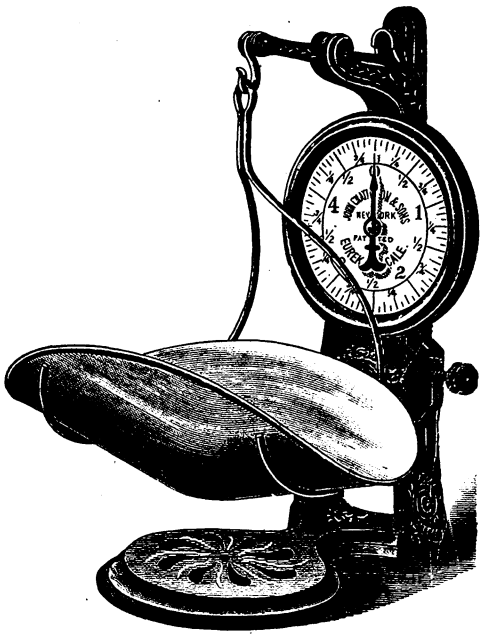
The Frosting of Show Windows.

Although rather late in the season, the following extract from the *Engineer* of London in regard to the prevention of frosting on show windows may be read with profit by those who have not yet discovered an effective remedy for the nuisance of obscured panes in frosty weather. The journal referred to remarks as follows: In order to prevent the frosting of windows they may be painted with a solution of glycerine in 63 per cent. spirits of wine. Glycerine, like chloride of lime, has the property of absorbing water, and this action overcomes the difficulty. For small show windows sulphuric acid may be employed, as is done in Russia, in the following way: Double windows having two plates of glass with a space of ¼ inch to ½ inch between them. The cracks between the two window frames and around the edge are kept tightly sealed, while several small vessels of proper form, half filled with concentrated sulphuric acid, are left in the space between the plates of glass; any small amount of moisture that may penetrate to this space is absorbed by the strong acid and the air thus kept perfectly dry, rendering the undesirable condensation and freezing of moisture on the cold outside glass entirely impossible. From the outside the double thickness of glass is scarcely perceptible, while the vessels containing the acid may be concealed by skillful decoration. The expense incident to the doubling of the windows limits the application of this method to small windows, however, and, further, a contemporary remarks, the painting of the larger windows with the glycerine and spirits of wine solution answers the desired purpose.

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Eureka Tea and Spice Scale.

John Chatillon & Sons, 85–89 Cliff street, New York, are offering this scale, and recommend it for quick and accurate weighing. It is a modified form of their

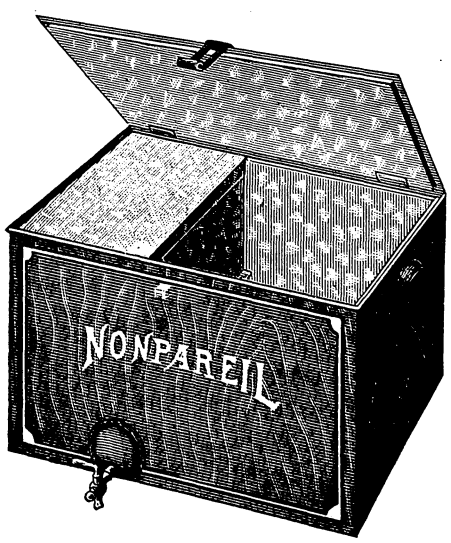


Eureka Tea and Spice Scale.

butter scale of this pattern, a scoop being substituted for the marble plate. The thumb screw at the side is for keeping the scale in balance, and may also be used to equalize the tare of plate or package. The scale has a capacity of 5 pounds by ¼ ounces, and is made with brass scoop and brass bails, all nickeled; with brass scoop and brass bails, and with tinned scoop and iron bails.

Refrigerators for Nurseries or Sick Rooms.

August Kreamer, manufacturer of kitchen and culinary utensils, house-furnishing goods, &c., 17–23 South Third street, Brooklyn, N. Y., is making a number of portable refrigerators, which can be supplied at a moderate cost. In the illus-

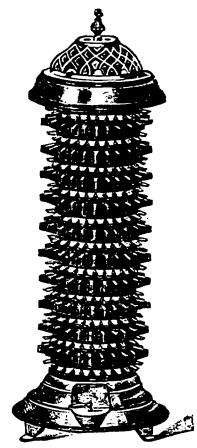


Refrigerators for Nursery or Sick Room.

tration is shown what may be termed a nursery refrigerator, made in a very thorough manner of heavy tin and lined inside with galvanized sheet iron. At the left of the box is a section in which to place ice, a movable tray at the bottom being provided for holding it. The water from the melted ice is easily drawn off by means of the faucet. On the right is seen the space intended for food, milk, medicines, perhaps, or whatever is desired to be kept cool. This portion is equally divided into two compartments by a movable tray. The contrivance is expected to supply a want where refrigerators are not available, as in apartments, hotels, hospitals, boarding houses, &c. The refrigerators are made in two sizes. No. 1 is 16 x 12 x 12 inches; No. 2 is 19 x 13 x 13 inches in dimensions. Another pattern is made corresponding with the above description, except that less space is allowed for ice and more for food, &c., while the faucet is placed half way between the top and bottom of the box.

Burton Electric Heaters.

A new electric stove, suitable for heating stores, offices and residences, made under the Burton Electric Company's patent, and placed on the market by Taylor, Goodhue & Ames, Monadnock Building, Chicago, is herewith illustrated, Fig. 1. This stove is 36 inches in hight, resting on a handsome nickel-plated base, with a nickel-plated top. The radiating surface



Burton Electric Heater.—Fig. 1.—General View of Stove.

is broken up into numerous small projections, with the result, it is claimed, of making it a rapid heater, and, as compared with other similar devices, an economical consumer of current. The connections are made underneath the stove. This heater is provided with a switch, by which the degree of heat may be regulated. Moderate heating will consume from 5 to 7 ampères of current on a 110-volt circuit, while in cold weather the heater will consume from 15 to 20 ampères. At the latter point the stove generates heat very rapidly and water may be boiled within a few minutes. Underneath the nickel-plated top is a flat surface upon which anything may be placed for warming or boiling. The stove itself is a hollow cylinder, and, as the castings are of thin metal, it takes but a short time to heat. Fig. 2 illustrates the new electrical device, made under the same patents as the electric stove, for cooking griddle cakes, and is used to advantage in residences or restaurants where heat and smoke are objectionable. This griddle cake device is about 20 inches long by 15 inches broad, and six griddle cakes can be cooked at one time upon it. It stands about 2½ inches high, and is attached to the socket by a simple plug and No. 18 incandescent lamp cord.

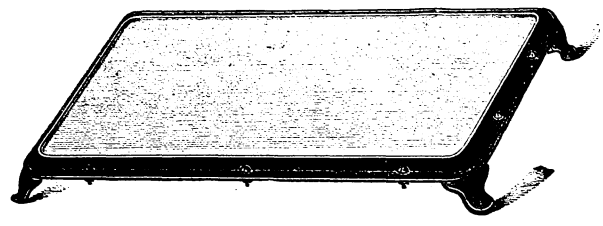
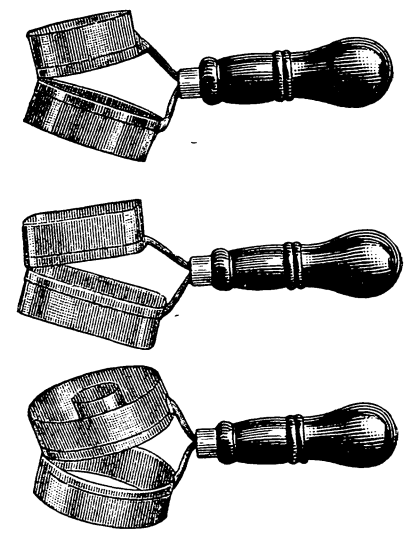


Fig. 2.—Electrically Heated Griddle.

Lebanon Cake Cutters.

Seltzer Specialty Company, Lebanon, Pa., are introducing cake cutters, as herewith shown. They are made in three styles



Lebanon Cake Cutters.

and sizes: Nos. 1, 2 and 3. The No. 1 has one cutter 2¼ inches in diameter, and one 2¾ inches diameter. No. 2 has two oblong cutters, 2 x 2⅛ and 2⅛ x 3 inches in size. Both cutters of No. 3 are 3 inches in diameter, but one of them has a center cutter 1⅛ inches in diameter. The cutters are well and strongly made, with convenient sized black enameled handles. The cutters are attached at the proper angle to be easily manipulated and are designed to clean easily, being entirely open. They are intended for cutting biscuits, doughnuts and cakes.

THE LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York, issue a notice to the trade under date of April 18, referring to their suit against the Haberman Mfg. Company and J. E. Mosheim, their auctioneer, which was decided last December in favor of the Lalance & Grosjean Mfg. Company. They refer to the circulars sent out by the Haberman Mfg. Company to the effect that an appeal would be taken. This appeal, it is stated, was taken to the United States Circuit Court of Appeals, being argued before Judges Wallace, Lacomb and Shipman, who handed down a unanimous decision on the 18th inst., affirming the previous decision, to the effect that the Haberman Mfg. Company had violated the patented process of the Lalance & Grosjean Mfg. Company, and that the injunction issued against them and J. E. Mosheim must stand. The announcement in this issue relating to this matter will be of interest to the trade.

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Aerating Pump.

The aërating pump illustrated in Figs. 1 and 2 is being offered by the Sandwich Enterprise Company, Sandwich, Ill. The

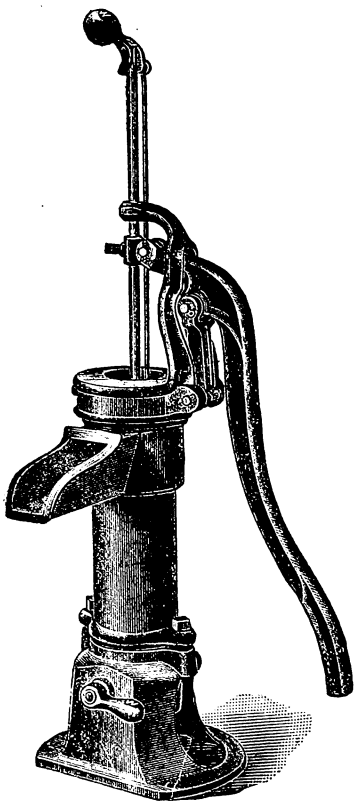


Fig. 1.—Aerating Pump.

pump, as shown in Fig. 1, has a brass cylinder; steel piston rod, guided; brass valve plunger; compressed steel handle

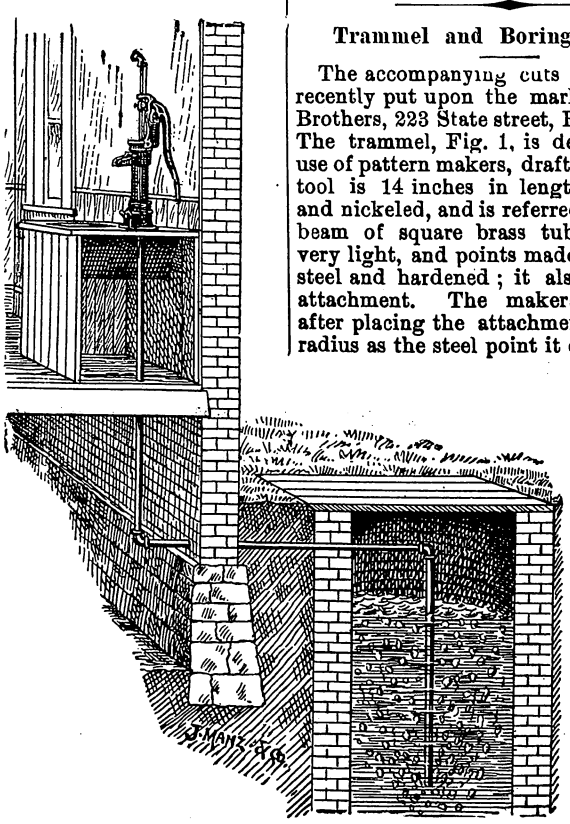
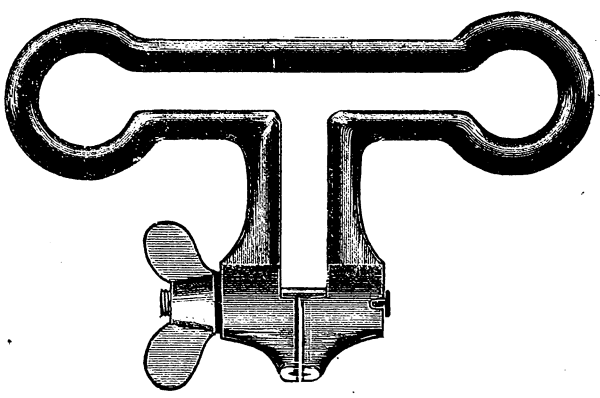


Fig. 2.—Operation of Aerating Pump.

pins; is painted and striped with gold bronze. As illustrated in Fig. 2, a stream of air is forced down to the bottom of the cistern, agitating the water and mixing the air with it, to take out odors, and to purify the water. In operation the ball at the top of the rod is tipped so that the letter A is uppermost, and the lever at the base is turned the same way. Then by working the pump handle the air is forced to the bottom of the water. After the ball and lever are turned to their original positions and the pumping continued, water is drawn from the cistern as with an ordinary pump. The manufacturers state that a few minutes' pumping air each day will sweeten the foulest cistern, and that when once sweet a few strokes of air after pumping water will keep it pure.

The Welch Tap Wrench.

The accompanying illustration is of a tap wrench being put upon the market by T. F. Welch & Co., 65 Sudbury street, Boston, Mass. It is made of steel, and



The Welch Tap Wrench.

the jaws are regulated by a thumb screw. The wrench is intended for small-size taps up to ¼ inch, and the manufacturers claim for it effectiveness and cheapness.

Trammel and Boring-Out Tool.

The accompanying cuts represent tools recently put upon the market by Hurley Brothers, 223 State street, Hartford, Conn. The trammel, Fig. 1, is designed for the use of pattern makers, draftsmen, &c. The tool is 14 inches in length, well finished and nickeled, and is referred to as having a beam of square brass tubing, which is very light, and points made from best tool steel and hardened; it also has a pencil attachment. The makers remark that after placing the attachment in the same radius as the steel point it can be changed from one radius to the other without changing the relation of one to the other. Attention is called to the fact that the points can be set approximately when brought down with fine adjustment at the end. At an additional cost an extension of 14 inches with a clamp is furnished when desired.

The boring-out or threading tool is made of round steel, turned at the point and

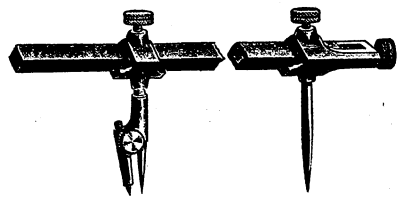


Fig. 1.—Trammel.

hardened. The tool holder has a V-slot milled in the top and bottom, one slot being small to hold a small tool. The tool is placed in the slot and the tool post screw is brought on the round steel to hold it fast in the slot. The point is made

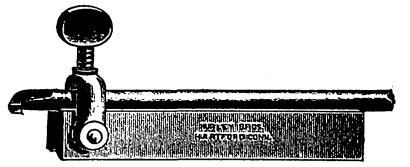


Fig. 2.—Boring-Out or Threading Tool.

that the strap at the end acts as a center rest for the tool and that the round steel can be drawn backward or forward as the work may require. The tool is designed to save forging and also to provide a stiff tool for boring or threading.

Columbia Tri-Colored Tack Package.

The H.P. Nail Company, Cleveland, Ohio, have recently put a tack package on the market, as illustrated herewith. The national colors, red, white and blue, run diagonally across the box, which is made



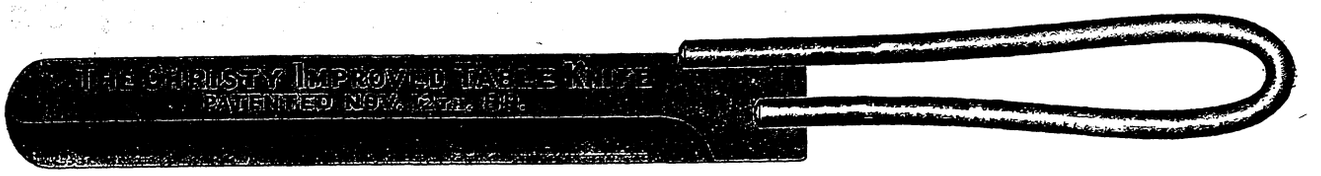
Columbia Tri-Colored Tack Package.

of a good quality of light-colored heavy paper. Each package contains 500 8-ounce bright wire tacks, which retail for 5 cents, and can be sold, it is stated, at a good profit to both jobber and retailer. To the consumer it furnishes 100 tacks for 1 cent, and a ten colored lithograph of the World's Fair goes with each gross case.

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The Christy Improved Table Knife.

The Christy Knife Company, Fremont, Ohio, have added still another form of knife to their line, as illustrated herewith, and which they are offering under the name of the Christy Table Knife.



The Christy Improved Table Knife.

They refer to the new production as being made entirely of steel, both the blade and handle, the latter so secured to blade as to avoid any liability of its becoming loose. The knives are ground on one side only, making it more convenient to keep them sharp, and are heavily nickel plated, requiring no scouring to keep them clean and bright.

These knives, it is stated, are intended for use where it is desired to save the wear and tear of the more expensive silver-plated goods.

Spring-Back Window Cleaner.

Wm. Vogel & Bros., 37–47 South Ninth street, Brooklyn, N. Y., as selling agents for H. Clayton & Co., are introducing the above article, illustrated in Fig. 1. The cleaner is made of galvanized iron and rubber, with a spring or flexible back, an end view of which is given in Fig. 2. When the edge of the rubber becomes worn and rough, it is laid on a flat board and cut off close to the metallic strip with a sharp knife. The manufacturers claim that this operation can be repeated several times, and that the cleaner will not rust, rot, warp or crack. The cleaners are made in four sizes: 8, 10, 12 and 14 inches.

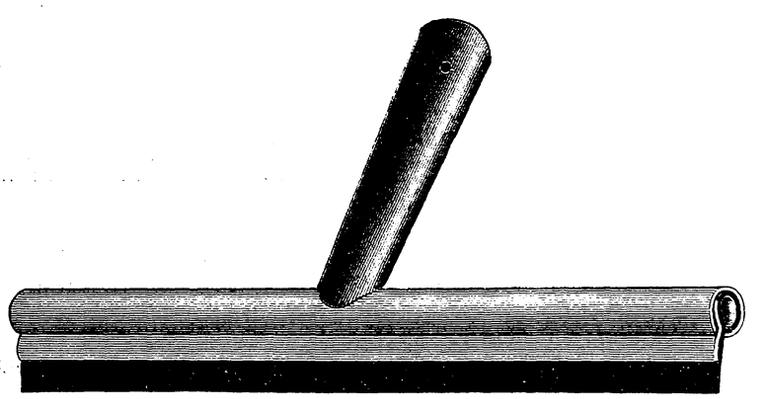


Fig. 1.—Spring-Back Window Cleaner.

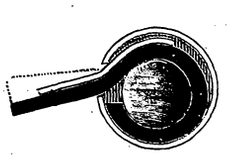


Fig. 2.—End View of Window Cleaner.

Housekeeping Devices.

August Kreamer, manufacturer of house-furnishing goods, 17 to 23 South Third street, Brooklyn, N. Y., is continually adding to his line of desirable specialties, in addition to a full assortment of tin, sheet iron and copper pieced ware suitable mainly for fine trade.

The stove-blacking box, illustrated in Fig. 1, is designed to keep together and in one place the implements and materials used in blacking stoves, ranges, &c. Neat housekeepers often keep a pair of old gloves to slip on for this occasion and use cloths and brushes in applying the polish. The lower compartment is intended for cloths, gloves &c. In the upper portion, the bottom being about 2 inches deep, may be kept polish, dauber and brushes. The article is made of heavy tin, being 11 inches long at the bottom, 13 inches the top and 8 inches wide, with a substantial handle. It is brown japanned with bronze lettering. Fig. 2 represents a housemaid's pail, to be used in scrubbing, &c., constructed of stout material and all in one piece, the various parts being rigidly attached to each other. The pail is of ordinary size, 11½ inches at the top and 9 inches deep. The extreme width of basin is 16½ inches. At the left is seen an attachment in which the brush may be placed after use, which both insures it being properly drained and found when next wanted. On the right is a receptacle with a perforated bottom for soap. The pails are painted a light blue or green tint inside and various colors on the outside. Another convenience, not illustrated, is a tin box for keeping the long narrow loaves familiarly known as French bread. It is of heavy tin, with a hinged cover and clasp and of the following dimensions: Length, 28 inches; hight, 12 inches; width, 10 inches. It is brown japanned with the words "French Bread Box" lettered in bronze. It has a capacity of ten or a dozen loaves.

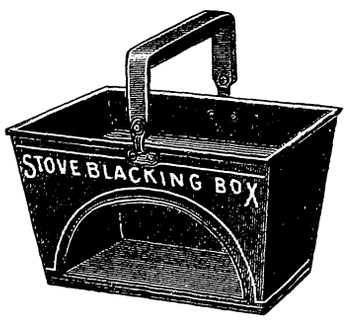


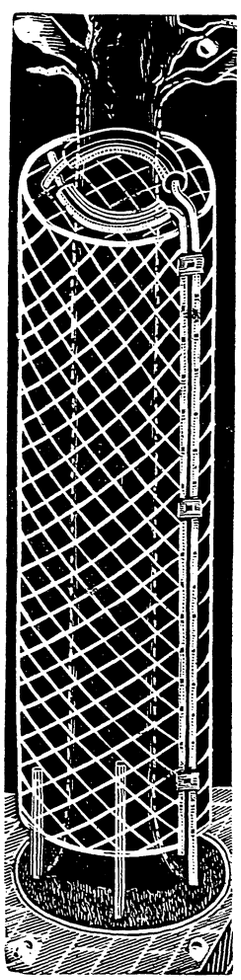
Fig. 1.—Blacking Box for Stoves, Ranges, &c.



Fig. 2.—Housemaid's Pail.

The McCallip Tree Protector.

The McCallip Fence and Wire Works, 487–489 Oak street, Columbus, Ohio, are introducing the tree protector herewith shown. It is made of heavy crimped steel galvanized wire, painted green, with strong round iron standards. The embracing arms that surround the tree at the top of the protector are rubber cashioned. The point is made that the protector is substantial, durable and ornamental, and



The McCallip Tree Protector.

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that it is adjustable to any size and growth of tree; also that it affords every benefit of sunlight, air and moisture, perfectly guarding the tree.

The Kempshall Hose Mender.

Underhill, Clinch & Co., 94 Chambers street, New York, as agents for the E. Kempshall Company, New Britain, Conn., are introducing the mender illustrated in Fig. 1. It is made of refined malleable iron, and in use requires no straps. It is simply screwed into the hose, and the levers hammered down, as in Fig. 2. The manufacturers claim that they will never work loose.

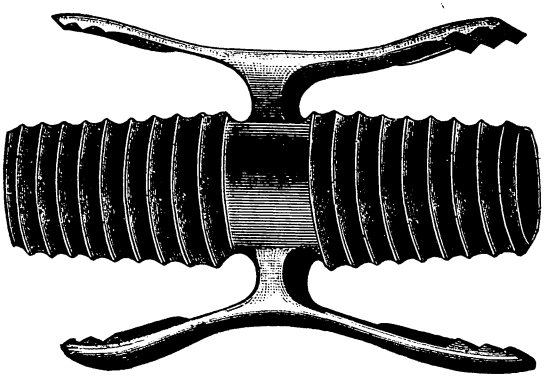


Fig. 1.—The Kempshall Hose Mender.

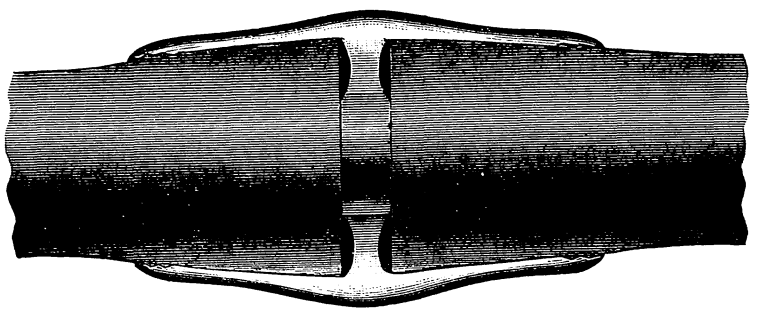
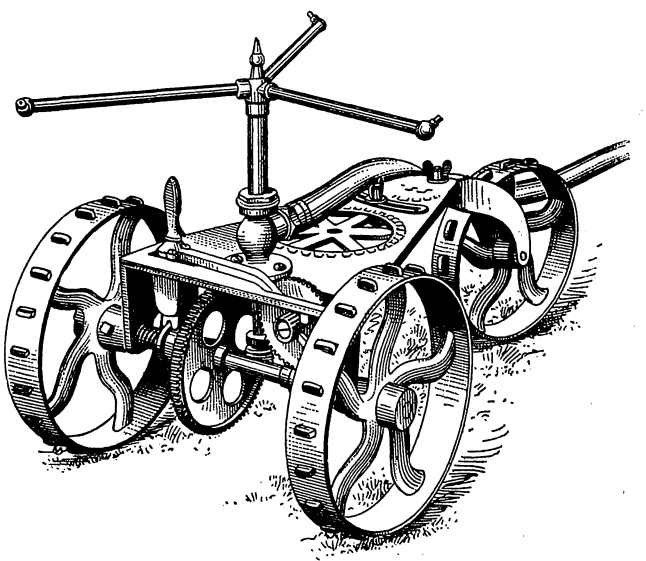


Fig. 2.—The Kempshall Mender Applied.

Little Giant Traveling Lawn Sprinkler.

The accompanying cut represents a sprinkler put on the market by the Portland Lawn Sprinkler Company, 98 Exchange street, Portland, Maine, and 32 Oliver street, Boston, Mass. Its construction is such that it has the capacity of moving itself over the lawn, or may be used stationary at any point desired. The manufacturers state that under an ordinary pressure of water it will roll itself slowly and steadily in any direction, either in a straight line or in a circle of any diameter desired; that it can be set to travel anywhere from 15 to 500 feet an hour, as preferred, and can be changed from the lowest to the highest speed in a moment; that it can be gauged to throw the water over a swath anywhere from 5 to 50 feet in width, or can be used as a stationary sprinkler by throwing it out of gear; that it has a figured dial by which it can be adjusted to travel any number of feet, and that it will stop automatically after covering the desired distance. It is claimed that with a pressure of water as low as 20 pounds it will drag 75 feet of hose, while with a pressure of 60 or 70 pounds it will carry 200 pounds extra weight and drag as many feet of hose. In an illustrated circular, testimonials are given from parties who used the machine last year.



Little Giant Traveling Lawn Sprinkler.

M. STRANSKY, importer of German Enameled Steel Ware for culinary and kitchen use, is now in Europe looking after matters pertaining to his business. He is now expected back the middle of May, having sailed from New York April 4 on the "Aller."

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Current Hardware Prices.

APRIL 26, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand.11@11½%
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star.....45&5%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70%
Boring Machine Augers.....70%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $18.....35&40%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co....30&10%
Double Cut, Hartwell's, ₩ gro., $5.00..25%
Double Cut, Douglass'.....40&10%
Double Cut, Ives.....60@60&10%

Hollow Augers—

Ives'
French, Swift & Co.(Beecher)
Douglass'
} 33⅓@33⅓ &10%

Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1....3¼¢@4¼¢, No. 2, 5¢@6¢
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 3% cash

Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self Oiling.....33⅓%@33⅓&5%

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)...₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)...₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@10@75&5%
Standard.....70&5@70&10%
Extra.....60&10@60&10&5%
N.Y.B.&P. Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks....25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84....80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....65%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓&35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Braces—

American Bit Brace and Tool Co.
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@60%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123. 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. } Per doz...

Inch	9	10	9x11
	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 12 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butcher.*

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75@75 &10%

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
} List Jan. 2 1893. 40@40&10%

Bronzed Wrought Butts.....50@50&10%

Callipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $2.10; 8-gal., $3.10; 10-gal., $3,35 each.....25%

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₩ 100
F. L. Waterproof, 1-10's.....35@37½
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket, Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire..$1.60

Primers—

Berdan Primers, $1.00.....3%
B. L. Caps (Sturtevant Shells) $1.00....3%
All other Primers, $1.20.....3%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....35%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting.....15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed.....
Plate.....
} Brass.....55@55&10%
} Others....60@60&10%

Shallow Socket...
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 8¢

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892..60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.30

Less than cask lots, add½¢@1½¢ ₩ ℔
German Coil, list July 12, 189260@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&5%
Covert Traces.....35&2%
Covert Heel Chain.....50&2%
Galvanized Pump Chain.
5-ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.'5
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Oneida Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list March 10, 1893.....50&10%
Barnes' Reinforced Sash.....60&10%
Barnes' Victor Sash.....65%

Chalk—

White, case lots. ₩ gr 50¢; small lots.55¢
Red, case lots....₩ gr 67¢; small lots.75¢
Blue, case lots....₩ gr 75¢; small lots 90¢
See also Crayons

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Chalk Lines—See *Lines.*

Chisels—

Socket Framing and Firmer

P. S. & W
New Haven
Witherby
Mix
Ohio Tool Co. .75&10@75&10&5%

Douglass 75@75&5%
Buck Bros. 30%
Merrill 60&10@60&10&5%
L. & I. J. White 30@30&5%

Tanged and Miscellaneous.

Tanged Firmers 50@50&10%
Butchers' $4.75@$5.00
Spear & Jackson's $5 to £
Buck Bros. 30%
Cold Chisels, ₩ lb 15@16¢

Chucks—

Beach Pat. each, $8.00 20%
Morse's Adjustable, each, $7.00,20@20&5%
Danbury each, $6.00,30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—

Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati 15&10%
Adjustable, Hammers 15@15&5%
Adjustable, Stearn's 30@30&10%
Stearn's Adjustable Cabinet and Corner 30@30&10%
Cabinet, Sargent's 70&10%
Carriage Makers', Sargent's 75@75&5%
Carriage Makers', P., S. & W. Co. 40&10%
Eberhard Mfg. Co. 40&5@40&10%
Warner's 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati 25&10%
Barnes' Machinists' Clamps. 33⅓%

Cleavers, Butchers'—

Bradley s 25@30%
L. & I. J. White 20&5%
Beatty's 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W 33⅓&5@33⅓&10%
Foster Bros. 30%
Schulte, Lohoff & Co. 40@40&5%

Clips—

Norway, Axle, ¼ & 5-16 55&5&5%
2d grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips 66⅔&5@70%
Norway Spring Bar Clips, 5-16 60&5&5%
Wrought Iron Felloe Clips ₩ lb, 5½¢
Steel Felloe Clips ₩ lb, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—

Hardware list 60&2%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Chapman Mfg. Company 50&10@60%
Medford Fancy Goods Co. 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list. 40%
Brass, Pope & Steven's list. 40%

Combs, Curry—

Fitch's 50&10@50&10&10%
Rubber, per doz., $10.00 25%
American Curry Comb Co. 33⅓@40%
Kohler's Magic Oscillating. ₩ doz., $2.00
Kohler's Humane ₩ doz., $1.75

Compasses, Dividers, &c.

Compasses, Calipers, Dividers. 70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses 50&5%
Calipers, Wing and Inside or Outside. 50&5%
Calipers, Double 60%
Calipers, Call's Patent Inside 30%
Excelsior 50%
J. Stevens & Co.'s 25&10%
Starrett's
Spring Calipers and Dividers. 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—

. S. & Co.: 2-gal., $2.30; 3-gal., $2.60; 4-gal., $3.00; 6-gal., $3.75 each 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—

Common ₩ lb, 9@10¢
Patent, good quality ₩ lb, 11@12¢
White Cotton Braided, fair ₩ lb, 24@25¢
Common Russia Sash ₩ lb, 12½@13¢
Patent Russia Sash ₩ lb, 13½@ 14¢
Cable Laid Italian Sash ₩ lb, 19@20¢
India Cable Laid Sash ₩ lb, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. 30¢
Semper Idem, Braided, White 27@28¢
Egyptian, India Hemp, Braided. 26¢
Massachusetts, White. 29¢
Samson—
Braided, White Cotton ₩ lb, 37¢
Braided, Drab Cotton ₩ lb, 42¢
Braided, Italian Hemp ₩ lb, 40¢
Braided, Linen ₩ lb, 56¢
Tate's Solid Braided—
Hercules, White ₩ lb, 25¢
Hercules, Drab ₩ lb, 30¢
Economy Drab ₩ lb, 27¢
Economy White ₩ lb 22¢
Ossawan Mills—
Braided, Giant, White, ₩ lb, 30¢ 20%
Braided Giant, Drab and Fancy, ₩ lb 35 10%
Braided, Crown White, ₩ lb, 50¢ 50%
Braided, Crown Drab and Fancy, ₩ lb 54 30%

Wire Picture—

Braided or Twisted 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters—See *Knives, Corn.*

Crackers, Nut—

Table (H. & B. Mfg. Co.) 40%
Blake's Pattern, ₩ doz., $2.00 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ₩ gro., $30 50%
Nickel Plated, ₩ gro. $30 10%

Cradles—

Grain 50&2@50&5&2%

Crayons—

White Crayons, ₩ gross 7@8¢
D. M. Stewart Mfg. Co., Metal Workers', ₩ gross, $2.50 25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gross, $2.50 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—

Meat—

Dixon's, ₩ doz. 40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's, ₩ doz. 40&5%

Nos.		100	150
		$15.00	$18.00

Hale's Pattern, ₩ doz. 70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American 30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise 25%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter 30@30&5%

Nos.	112	116	118	120	122
Each	$2.00	$2.75.	$3.00	$3.50	$4.00

Miles' Challenge, ₩ doz. 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1, ₩ doz., $26.00 55&10%
Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

20@25%
Beef Shavers (Enterprise) 20%
Little Giant (P. S. & W. Co.) 50%
Chadborn's Smoked Beef Cutter, ₩ doz., $66.00

Tobacco

Champion 20&10@30%
All Iron ₩ doz., $4.25
Nashua Lock Co.'s ₩ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ₩ doz., $24.00, 55&10%
Acme ₩ doz., $20.00, 40%

Washer—

Smith's Pat. ₩ doz., $12.00, 20&10&10%
Johnson's ₩ doz., $11.00, 33⅓%
Penny's ₩ doz., Pol. $14; Jap'd, $16, 55%
Appleton's ₩ doz., $16.00, 60&10%
Bonney's 30&10%
Cincinnati 25&10%

Dampers, &c.—

Dampers, Buffalo 40&10%
Buffalo Damper Clips 40&10%
Crown Damper 40%
Excelsior 40&10%

Diggers, Post Hole, &c.—

Samson, ₩ doz., $34.00 25@25&10%
Fletcher Post Hole Augers, ₩ doz., $36.00, 20@20&10%
Eureka Diggers ₩ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ₩ doz., $8.50@$9.50
Kohler's Little Giant ₩ doz., $18.00
Kohler's Hercules ₩ doz., $14.00
Kohler's Invincible ₩ doz., $12.00
Kohler's New Champion ₩ doz., $8.00
Scheidler ₩ doz., $18.00
Cronk's Post Bars, ₩ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger ₩ doz., $15.00
Gibbs' National ₩ doz., $12.00
Gibbs' Columbia ₩ doz., $13.00
Gibbs' Imperial ₩ doz., $7.50
Shimer's Hollow Handle ₩ doz., $24.00, 50%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Springs—
See *Springs, Door.*

Drawers.

Money, ₩ doz. $18@$20

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—

Blacksmiths' each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W. 40&10%
Breast, Wilson's 30&5%
Breast, Millers Falls. each $3.00, 25%
Breast, Bartholomew's. each $2.50 25&10@40%
Ratchet, Merrill's 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's 20@20&5%
Ratchet, Whitney's 20&10%
Ratchet, Weston's 20@25%
Ratchet, Moore's Triple Action 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 20&10%
Automatic Boring Tools $1.75@$1.85
Chicopee Automatic Drill 20&10%

Twist Drills—

Cleveland 50&10&10%
Diamond, W. & B. 50&10&10%
Graham's Pat. Groove Shank 50&10&10%
Morse 50&10&10%
New Process 50&10&10%
Standard 50&10&10%
Syracuse (Meta list) 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—

Douglass Mfg. Co. 20@20&10%
Disston's 50%
Buck Bros. 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles 65&10%
No. 86 70&10%
Sargent & Co.'s
No. 1, Forged Blade 60&10&10%
Nos. 20, 40 and 60 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 60&20@70%
No. 2 60&10&10@70&5%
No. 3 60&5@60&10%
Nos. 4 and 00, Acme and Ideal 50&5@50&10&5%
Stearns' 25&10&5%
Gay & Parsons 35%
Champion 25&10%
Clark's Pat. 30@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense ₩ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits 30&30&5%
Screw Driver Bits. ₩ doz., 50@75¢
Screw Driver Bitts, Parr's ₩ gross, $6.25
Fray's Hol. H'dle Sets. No. 3, $12.00, 45%
P. D. & Co.'s All Steel 50%
Cincinnati 25&10%
Brace Screw Drivers 25&10%
Buck Bros.' Screw Driver Bits 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch 45&10%
C. T. Williamson Wire Novelty Co. 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4¾¢	5½¢	2¾¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-₩ cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—

Door Lock. Same dis. as Door Locks.
Brass Thread 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.

Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Mackrell's, ₩ doz., $1.00 20@20&10%
Van Sand's Screw Pat, $15 ₩ gr. 60&10%
Van Sand's Old Pat., $15 ₩ gr. 55&10%
Austin & Eddy No. 2008 ₩ gr., $9.00
Security Gravity ₩ gr., $9.00
Zimmerman's 50&10%

Faucets—

Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list. 60%
Metallic Key, Leather Lined. 60&10@60&10&10%
Cork Lined 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined. 50%
No Brand, Red Cedar (in bbls.) 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ₩ doz., $36.00 20%
Lane's ₩ doz., $36.00 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—

Derby and Cincinnati 45&5%
Brewster 50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) 75% (extra prices on certain sizes.)
American 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade 60&10&10@70%
Eagle 60&10&10@70%
Other makers, best brands 60&10&5@70%
Fair brands 70@70&10%
Second quality 75@75&10&5%
Heller's Horse Rasps 50&7½@50&10%
McCaffrey's Horse Rasps 50&10%
Chelsea Horse Rasps, Hand Cut 50&10%
Arcade Horse Rasps 60&10@60&10&5%
Trojan Horse Rasps 60&10&5%

Imported—

Butcher Butcher's list, 20%
Stubbs Stubbs list, 25@30%

Fixtures, Grindstone—

Sargent's Patent 70&10%
Reading Hardware Co. 30&10%
P., S. & W. Co. 50&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—

Hay, Manure, &c. Asso. List, 70@70&5&5%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—

White Vermont ₩ gro., $9.00@$10.00
Red, Polished and Varnished ₩ doz., $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons 33⅓%
Stearns' Frames and Corners. 25@25&10%
Cortland 40@40&5

Freezers Ice Cream—

White Mountain 60@60&5%
Granite State 65@65&5%
Arctic 70@70&5%
American 60%
Buffalo Champion 65@65&5%
Shepard's Lightning 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless 60&10%
Giant 60%
Zero 60&10&10%
Boss and Pet 60&10&10%
Keystone, P., D. & Co., each, $1.50 20%
Standard 60@60&5%
Standard Double Action 60@60&5%
Expert 65@65&5%
Model 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Funnels—

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10¢; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—

Burgess No. 3 Gem tin reservoir. $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ₩ 1000 ft.
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground. 3.85
Double Taped Fuse, for very wet gr. 4.80
Triple Taped Fuse, for very wet gr. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates Molasses—

Stebbin's Pattern 80@80&5%
Stebbin's Genuine 60&10&10%
Stebbin's Tinned Ends 40&10%
Lincoln's Pattern 70@70&10%
Weed's 20&10%
Boss, ₩ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 60&10&10%

Gauges—

Marking, Mortise, &c. 60&10%
Starrett's Surface, Center and Scratch. 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge. 20&10%
Barrett's Comb. Roller Gauge
₩ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ₩ doz., $5.00
Without Scale ₩ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's 10@20%
Wire, P., S. & W. Co. 10&10%

Gimlets—

Nail and Spike 50&10&5%
Eureka Gimlets 60&10%
Diamond Gimlets ₩ gr $5.00
Double Cut, Shepardson's 45@45&5%
Doub e Cut, Ives' 60@60&5%
Double Cut, Douglass' 40&10%

Glue—

Le Page's Liquid 25@25&5%
Upton's Liquid 35%
Improved Process 25@25&5%
Dodd's Liquid Glue 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Fraser's Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes ₩ gr $9.50
Dixon's Everlasting, in bxs. ₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting. 10-lb pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00
Axleine, tin boxes ₩ gross $12.00
English Coach, wooden boxes
₩ gross $8.50
English Coach, 5-lb tin pails ₩ doz. $3.50
Tiger, wooden boxes ₩ gross $7.00
Tiger, 5-lb tin pails ₩ doz $2.85

Grindstones—

Small, less than car load lots at quarry ₩ ton $9.00 @ $10.00
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Sewing, Brass Fer. ₩ gr. $1.75
Pat. Sewing, Short. ₩ doz. 45@50%
Pat. Sewing, Long ₩ doz $1.20
Pat. Peg, Plain Top. ₩ doz. 40@45%
Pat. Peg, Leather Top. ₩ doz @50%

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Halters—

Covert's, Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
} ....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

8 ℔ and under...℔ ℔40¢
8 to 5 ℔.....℔ ℔30¢
Over 5 ℔.....℔ ℔30¢
} 75&10@75&10 &5%
Wilkinson's Smiths.....10½¢@11¢℔ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....
Champion.....15%
Ely's Perfection.....℔ doz., $3.00

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4	5
Per doz.	$0.90	1.00	1.08	1.35	1.50	60&10&10%

Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—

Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd. ℔ gr 3.00
Socket Framing Chisel, ass'd. ℔ gr 5.00
} 40&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75
Auger, assorted. ℔ gr 5.00
Auger, large.....℔ gr 7.00
} 50%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....60@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati, Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15.
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
} 40 & 10 @ 50&5%
Buffalo Hammer Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent's & Co.....
P., S. & W. Co.....
} Ten Eyck Edge Tool Co.....
Collins.....10%
Schulte, Lohoff & Co.....50&50&5%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50..80@80&5%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13..75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 6 @60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60& ½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....40%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&5%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap... 6 to 12 in., ℔ ℔.. 4¢; 14 to 20 in., ℔ ℔..3½¢; 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye.... ½ in., ℔ ℔ 7¾¢; ⅝ in., ℔ ℔ 5¾¢; ¾ in., ℔ ℔ 4¼¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges "Providence" 8, 10 & 12 in., ℔ ℔.....5¢; over 12 in. ℔ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat
Am. Axe and Tool Co., S. & O. Pat.....
} 70@70& 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....℔ doz $18....60%

Bit—

Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—

Balz Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size.. ..40%

Hooks—

Cast Iron—

Bird Cage, Sargent's List....
Bird Cage, Reading.....
Clothes Line, Sargent's list
} 60&10&10%
Clothes Line, Reading list 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50x10&10%

Wrought Iron—

Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg.Co....50%
Wrought Staples, Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No.2, $2.00; No.3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition.....75@75&10&5%
Standard.....60&10&10@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee.....50&10@60%

Huskers—

Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Enterprise Irons, list Jan. 17, 1893...30%
Enterprise Star Irons, list Jan. 17, '93..30%
Crown.....60&10@60&10&5%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3¼¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—

Pinking Irons, ℔ doz., 65@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's Aa A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby.....
P. S. & W.....
Mix.....
New Haven.....
} ...75@75&10&5%
Merrill.....60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@35%
L & I. J. White.....20&5%
Bradley's.....5%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$3.00@$9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00%

Mincing—

Am. (2d quality), ℔ gr., 1 blade, $7 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓%

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l....$2.00@$2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&1%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single.....20&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.50
Brass Plated, Sq. Lift, Guard..℔ doz $5.50
Cop. Plated, Sq. Lift, Guard..℔ doz $5.50

Bull's Eye Police—

2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... List March, '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10
Champion Cab. and Combin.....33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar.20, 1889.....
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., List Aug.1, '88
Branford Lock Works.....
} 65&10@70& Much lower net prices often mad

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Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ℔ doz. $8.00, 50%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....℔ doz $0, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50&5%
No. 61 line.....60&5%
No. 21 line.....75&10%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ℔ gr.....33⅓&5
Ferguson's.....33⅓&5
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓&5
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....℔ gr $4.00
Common Sense, Nickel Plated. ℔ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Paysen's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ℔ gr., $8; No. 105, ℔ gr., $10.....50%
Davis, Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....℔ doz, $1.75; ℔ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat..	5.50	6.75	40&10&10%	
Jennings'	5.50	6.75	45&10&10%	
Other Machines..	2.35	2.75		

Phillips' Patent with Augur.....7.00 7.50.....
Miller's Falls.....7.50 .....25%

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ℔ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ℔ doz $11.00.....40%
Shepard Hand Fluter No. 95, ℔ doz $8.00.....40%
Combined Fluter and Sad Iron. ℔ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Differential Pulley Block.....40%
Energy's Mfg. Co.'s.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ℔ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....℔ doz $36.00
Western Star ℔ doz, No. 2, $36; No. 3 $39.
Weisell.....℔ doz $54.00
Fair and Square.....℔ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fiberware, No. 1, peck: ℔ dozen, $3.50; ½-peck, $3.00.

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%

Mincing Knives—See *Knives, Mincing.*

Molasses Gates—See *Gates, Molasses.*

Money Drawers—See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16 in., $5.50; 18-in., $6
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety.....℔ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92. 80&10&10&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	8¾	8¾	8¾	8¾	8¾	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&10&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	30&10%
Essex	28¢	26¢	25¢	24¢	23¢	40&10&5@50&5%
Lyra	19¢	17¢	16¢	15¢	14¢	40&10%
Snowden	19¢	17¢	16¢	15¢	14¢	40&10%
Vulcan	23¢	21¢	20¢	19¢	18¢.	25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
A. C.	25¢	23¢	22¢	21¢	21¢	25&10@33⅓&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	33⅓@33⅓&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	40&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&5&2%
Saranac	23¢	21¢	20¢	19¢	18¢.	40&5%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢.	10&5%
Anchor	23¢	21¢	20¢	19¢	18¢.	35%
Western	23¢	21¢	20¢	19¢	18¢.	50%

Empire Bronzed.....13@14 ℔ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ℔ ℔, net; in packages less than 100 ℔, add ½¢ ℔ ℔, net.

Oakum—

Best or Government. . .....℔ ℔ 6¾@7¼¢
U. S. Navy.....℔ ℔ 5¾@6¢
Navy.....℔ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ℔ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%

Openers, Can—

Messenger's Comet.....℔ doz $3.00, 25%
American.....℔ gross $2.75@$3.00
Duplex.....℔ doz 25¢, 15@20%
Lyman's.....℔ doz $3.75, 20%
No. 4, French.....℔ doz $2.25, 55@60%
No. 5, Iron Handle.....℔ gr $6.00, 45@50%
Eureka.....℔ doz $2.50, 10%
Sardine Scissors.....℔ doz $2.75@3.00
Star.....℔ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ℔ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ℔ doz $3.00.....55&5%
Domestic, ℔ doz $2.00.....45%
Champion, ℔ doz $2.00.....50%

Packing, Steam—

Rubber—

Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ℔ ℔ 80¢...25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ℔ ℔
Russia Packing.....14¢ ℔ ℔
Italian Packing.....13¢@14¢ ℔ ℔
Cotton Packing.....15¢@17¢ ℔ ℔
Jute.....7¢@8¢ ℔ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 per doz.....5%

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ℔ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ℔ dz.	3.00	3.25	3.75	
Heiwig's	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware—25%

Star Pails, 12 qt.....℔ doz $4.20
Milk, 14 qt.....℔ doz $5.40
Stable, 14 qu.....℔ doz $6.00
Fire Pails, deep.....℔ doz $4.80
Fire Pails, round bottom.....℔ doz $5.40

Standard Fiber Ware—

	Plain.	Decr'd
Water Pails, 12 qt., ℔ doz.	$3.60	$4.00
Dairy Pails, 14 qt., ℔ doz.	4.00	4.50
Fire Pails, No. 1, 12 qt., ℔ doz	4.00	
Fire Pails, No. 2, 14 qt., ℔ doz	4.50	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....℔ ℔ 5½¢
Large sizes.....℔ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
℔ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.		5	6	7	8
℔ doz.		$6.00	$7.00	$8.00	$9.00

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....℔ doz $1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....50%

Paper and Cloth—Sand and Emery—

List April 19, 1886.....50&10@50&10&5%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....℔ doz $4.75
Baldwin.....℔ doz 5.25
Bonanza.....each 5.00
Daisy.....℔ doz 4.00
Dandy.....each 7.50
Eclipse.....℔ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....℔ doz 12.00
Favorite.....℔ doz 5.00
Gold Medal.....℔ doz 4.00
Ideal.....℔ doz 4.00
Improved Bay State....℔ doz 27.00@30.00
Little Star.....℔ doz 4.50
Monarch.....℔ doz 13.50
New Lightning.....℔ doz 5.50
Oriole.....℔ doz 4.00
Penn.....℔ doz 4.00
Perfection.....℔ doz 4.00
Pomona.....℔ doz 4.00
Rocking Table.....℔ doz 6.00
Turn Table.....℔ doz 4.50
Victor.....℔ doz 13.50
Waverly.....℔ doz 4.00
White Mountain.....℔ doz 4.00
72.....℔ doz 4.25
78.....℔ doz 7.00

Potato—

White Mountain.....℔ doz $4.50
Antrim Combination.....℔ doz $5.50
Hoosier.....℔ doz $13.50
Saratoga.....℔ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....℔ gro $5.25
Dixon's Lead.....℔ gro $4.50
Dixon's Lumber.....℔ gro $6.75
Dixon's Carpenters'.....10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&10%

Picture Nails—See *Nails, Picture.*

Pinking Irons—See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Curtain—

Silvered Glass.....net
White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—List October 12, 1892.

1¼ and under, Plain.....60&10%
1¼ and under, Galv.....52½&10%
1½ and over, Plain.....70&10%
1½ and over, Galv.....60&10%
Boiler Tubes, list Oct. 24, 1892....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing..50%

Planes and Plane Irons—

Wood Planes—

Molding.....40@40&10%
Bench, First quality.....45@45&10%
Bench, Second quality.....50@50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to $
Buck Bros.....30%
Auburn Thistle, Ohio, Sandusky.....30&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....℔ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ℔ doz.....40%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....33⅓&5
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ℔ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in., $21.00.....50@50&5%
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&5%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....40&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz, No. 1, $6.00; No. 2, $9.00.....33⅓&5
Silver & Co., 6-Ring, ℔ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....℔ doz $6.00
Bishop's Monarch.....℔ doz $4.50
Bishop's Pioneer.....℔ doz $4.00
Bishop's American.....℔ doz $3.00
Eagle, Double Stale.....℔ doz $5.75
Eagle, Single Stale.....℔ doz $3.75
Buckeye, Single Stale.....℔ doz $2.75
Bolding.....℔ doz $6.00
Metallic Horse Poke.....℔ doz., $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ℔ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ℔ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ℔ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ℔ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓&5
Gaston's Silver Compound.....33⅓&5

Stove—

Joseph Dixon's.....℔ gro, $6.00, 10%
Gem.....℔ gro, $4.50, 10%
Gold Medal.....℔ gro, $6.00, 25%
Lustro.....℔ gro, $4.75
Ruby.....℔ gro, $3.75
Rising Sun, 5 gro lots.....℔ gro $5.50
Dixon's Plumbago.....℔ ℔ 8¢
Boynton's Noon Day.....℔ gro $13.00
Parlor Pride Stove Enamel, ℔ gro
Yates' Liquid, 2 3 5 10 gal
℔ gal..$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ℔ ℔ 12½¢
Jet Black.....℔ gro $3.50
Japanese.....℔ gro $3.50
Fireside.....℔ gro $2.50
Diamond O. K. Enamel.....℔ gro $19.00
Bonnell's Liquid Stove Polish, ℔ gro $9.00
Bonnell's Paste Stove Polish, ℔ gro $9.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....℔ gro $6.00
Crown Paste.....℔ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ℔ ℔ 12¢
Black Flag.....℔ gro $7.20
Black Flag, 5 and 10 ℔ pails....℔ ℔ 12¢
Black Flag, liquid, in bottles, ℔ gro $8.00
Diamond Rock Nickel Cleaner.....℔ gro $10.20
Raven Paste.
5-lb. pails, (per case of 6 or 12), ℔ ℔. 12¢
Less than case.....℔ ℔. 15¢
Liquid, 6 oz. bottles.....℔ gross, $3.00
Liquid, 8 oz. bottles.....℔ gross, $9.00
Water Polish.....℔ gross, $5.35

Poppers, Corn—

Round or Square, 1 qt., ℔ gr $10.00@10.50
Round or Square, 1½ qt., ℔ gr $15@$15.50
Round or Square, 2 qt., ℔ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See *Diggers, Post Hole, &c.*

Potato Parers—See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....30
Rifle, ½ ℔ each.....15
Rifle, ¼ ℔ each.....13

In Kegs—

Rifle, 25-℔ kegs.....$4 00
Rifle, 12½-℔ kegs.....2.25
Rifle, 6¼-℔ kegs.....1.25
Duck, 25-℔ kegs.....5.00
Duck, 12½-℔ kegs.....2.75
Duck 6¼ ℔ kegs.....1.50

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Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Henis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

Pullers Nail—

Scranton.....₩ doz., $18.00, 33⅓%
Curtis Hammer.....₩ doz., $9.00
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....Each, $2.00, net
Economy.....₩ doz., $6.00

Pulleys—

Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Japanned Clothes Line.....60&10%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 / Acme / Star. } 10% less 1¢ ₩ doz net.
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—

Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—

Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..50&5%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check.40%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets

Rail—

Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Moore's Wrought Iron.....25%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—

Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—

J. R. Torrey Razor Co.....20%
Wostenholm and Butcher, $10 to £....10%
Jordan's AAAI, new list.....Net
Jordan's Old Faithful, new list.....Net
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net
Campbell Cutlery Co.....50%

Razor Strops—See *Strops, Razor.*

Rings and Ringers—

Bull Rings—

Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list.....50@50&10%

Hog—

Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—

Iron, list Nov. 17, '87.....60&10@—%
Copper.....60@60&10%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—

Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—

Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ½¢@½¢ on large lots; terms, 1½% for cash.

Manila, 7-16 in. diam. and larger₩ ℔ 9½¢
Manila.....⅜ in. ₩ ℔ 10 ¢
Manila.....¼ and 5-16 in. ₩ ℔ 10½¢
Manila, Tarred Rope.....₩ ℔ 9 ¢
Manila, Hay Rope.....₩ ℔ 9 ¢
Sisal.....7-16 inch and larger ₩ ℔ 7¾¢
Sisal.....⅜ in. ₩ ℔ 8¼¢
Sisal.....¼ and 5-16 in. ₩ ℔ 8¾¢
Sisal, Hay Rope.....₩ ℔ 7¾¢
Sisal, Tarred Rope.....₩ ℔ 7½¢
Sisal, Medium Lath Yarn.....₩ ℔ 7½¢
New Zealand..7-16 in. & larger ₩ ℔ 7½¢
New Zealand.....⅜ inch, ₩ ℔ 7¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 8¼¢
New Zealand, Hay Rope.....₩ ℔ 7½¢
New Zealand, Tarred Rope.....₩ ℔ 6¾¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope.....₩ ℔ 6½@7¢

Wire—

List February, 1892. All kinds.....45%

Rules—

Boxwood.....80&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—The following prices are generally cut by jobbers.

Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....50%
Atkins' Cross Cuts, new list. 40@40&10%
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1,'93.45&10%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co.'s brand.....25%

Hack Saws—

Griffin's, complete.....40&10&50
Griffin's Hack Saw Blades.....40&10&50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—

Hatch, Counter, No. 171, good quality ₩ doz $18.00@$19.00
Hatch, Tea, No. 161...₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.25@$2.50
Box, 2 Handle.....₩ doz $3.00@$3.25
Defiance Box and Ship.....20&10%
Foot.....50&10&60%
Ship, Common.....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—See *Drivers, Screw*

Screws—

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890.....80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80@80&5%
Hand Rail, Sargent's.....70&10%
Hand Rail, H. & B. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—

Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Detroit Cork Screw Co.....33⅓%

Machine—

Flat Head Iron.....65%
Round Head Iron.....60%

Wood—

List January 1, 1891.

Flat Head Iron	70%	Extra 10 or 10& 10% often given.
Round Head Iron	65%	
Flat Head Brass	70%	
Round Head Brass	65%	
Flat Head Bronze	70%	
Round Head, Bronze	65%	

Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—See *Snaths, Scythe.*

Sets—

Awl and Tool—

Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—

Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 25%

Rivet—

Regular list.....70%

Saw—

Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $5.25.....55%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $14.00.....40&20%
No. 11, $15.50.....40&20%
Nos. 3 and 4, Cross Cut, $22.50..40&20%
No. 5, Mill, $30.00.....40&20%
No. 10, $15.00.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat., 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut.....12½%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—

Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.)....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—

American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓&
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic 9½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Pruning Shears and Hooks

Disston's Combined Pruning Hook and Saw.....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat., ₩ doz. $3.75@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz...40&3%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@35%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax. 65&2%

Shells, Loaded—

Standard List, July 19, 1890.....40&10&10@40&10&10&2%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, Standard, Diamond State and Bryden's Boss, at factory.....$4.00
Bryden's Frog Pressure, at factory..$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—

	Small lots.	
Drop, up to B, 25-℔ bag	$1.45	In ton lots a discount of 5¢ ₩ bag (25 ℔) is made.
Drop, up to B, 5-℔ bag	.35	
Drop, B and larger, 25-℔ bag	1.70	
Drop, B and larger, 5-℔ bag	.40	
Buck and Chilled, 25-℔ bag	1.70	
Buck and Chilled, 5-℔ bag	.40	
Dust Shot, 25-℔ bag	2.00	
Dust Shot, 5-℔ bag	.45	

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&5%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)40&10&50%
Rowland's Black Iron..50&10@50&10&5%
Rowland's Steel.....60&5@60&10%
Terra Haute Shovel &.....25%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $18.00@$20.00
Electric.....₩ gr $17.00@$20.00
A. & W. Sifters.....₩ gr $18.00@$20.00
Hunter's.....₩ gr $18.00@$20.00

Sieves, Wooden Rim—

	Iron	Plated.
Mesh 18, Nested, ₩ doz.	$0.80	$1.00
Mesh 20, Nested, ₩ doz.	.95	1.10
Mesh 24, Nested, ₩ doz.	1.15	1.35

Sinks, Wrought Steel—

Columbus, Painted or Unpainted..... 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted.....40&10@50&5%
New Era, Galvanized and Enameled. 60&10&10@70&5%

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Sleds, Hand—

Tubular Steel.....₩ doz $24.00 40&5 (Lots of 6 doz 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph 33⅓&5%
John Protz Snaps....75@75&5%

Snaths—

Scythe....50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½&2%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No. 50 Nickel Silver....50&5%
No. 49 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&6%
18% Rogers' German Silver....60&6%
22% Rogers' Nickel Silver....50&6%
German Silver....50@50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron....
Nickel-Plated....} ..80&10&10@80&25%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—

orcelain Lined, No. 1....₱ doz $6.00 25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Dunlap's Improved....₱ doz $3.75, 20%
Sammis....No. 1, $5,00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co., Glass....₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger..₱ ℔ 7@7½&5
Barbed Blind, ¾ in....₱ ℔ 8@8½&5
Fence Staples, Galvanized.} Same price as B'rb Wire
Fence Staples Plain.....} See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stops, Bench—

Morrill's, ₱ doz., Nos. 1, $9.50; 2, $12.00....40&20%
Hotchkiss's....₱ doz $5, 10@10&10%
Weston's, No. 1, $10 No. 2, $9, 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone....5¢
Turkey Oil Stone, 4 to 8 in....80¢
Turkey Slips....$2.00
} 40@40&10%
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
} 33⅓@33⅓&10%
Lake Superior....₱ ℔ 13¢
Lake Superior Slips....₱ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers, Carpet—

Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen, Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Goshen....₱ doz $21.00
Supreme....₱ doz $22.00
Easy....₱ doz $22.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....₱ doz $30.00
Banner....₱ doz $22.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
The Rapid....₱ doz $22.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
25 dozen in 6 months....₱ doz $3.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....30%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic 66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....60%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....62½%
Tinned or Coppered....66⅔%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....45%
Tin Capped Nails....50%

Extra discount 25&2%

Miscellaneous—

Double Point....90@90&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box 1 50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00.
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00.
} 50@2%
Upholsterers' Nails....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10%

Tapes, Measuring—

American....40@40&5%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies..₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—

Atkins', new list....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....70&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40%
Barnes' Barrel Trucks....40%

Tubes. Boiler—

See Pipe

Twine—

Flax Twine—

	DC.	B.
No. 9, ¼ and ½ ℔ Balls	26¢	31¢
No. 12, ¼ and ½ ℔ Balls	22¢	30¢
No. 18, ¼ and ½ ℔ Balls	20¢	29¢
No. 24, ¼ and ½ ℔ Balls	20¢	29¢
No. 36, ¼ and ½ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls 52@54¢
Chalk Line, Cotton, ½ ℔ Balls....25¢
Mason Line, Linen, ½ ℔ Balls....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)....15½¢
3-Ply Hemp, 1 ℔ Balls....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls....10¢
Wool....6½¢@6½¢
Paper....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ₱ to doz..18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@30%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ doz., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous—

Phœnix Vises....33⅓%
Phœnix Hand Vises....₱ doz $3.60, 33⅓%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.0 , 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up..68¢
U.M.C.&W.R.A.—B. E., 9&10..82¢
U.M.C.&W.R.A.—B. E., 8....96¢
U.M.C.&W.R.A.—B. E., 7....$1.10
U.M.C.&W.R.A.—P. E., 11 up..1.15
U.M.C.&W.R.A.—P. E., 9&10..1.50
U.M.C.&W.R.A.—P. E., 8....1.70
U.M.C.&W.R.A.—P. E., 7....1.80
} Dis. 20&2%
Eley's B. E., 11 and larger....$1.70@$1.75
Eley's P. E., 12 to 20....3.00@ 3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5%
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60&60&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓&10%
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in....	$1.80	2 00
Wash-Basins, 12 in....	2.00	2.50
Keelers, 11¼ in....		3.50
Cuspidors....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz....$6.00
Basins, Ringed, ₱ doz., No. 2....2.80
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest....5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest....1.50
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), ₱ set....1.20
} 25%
See also Pails.

Silver Plated, Hollow—

4 mo. or 5 % cash in 30 days.
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co....
Rogers & Brother....
} 40&5%
Hartford Silver Plate Co....
William Rogers Mfg. Co....
} 40&5&5%

Washers—

Size hole....5-16 ⅜ ½ ⅝ to 1⅝
Washers....5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₱ ℔, add 1¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₱ ℔ 3½¢
Steel....₱ ℔ 3½¢

Weights, Sash—

Solid Eyes....₱ ton $18.00@$19.00

Well Buckets Galvanized—See *Buckets, Well, Galvanized.*

Wheels Well—

3 in., $2.00 10 in. $2.50 12 in $3

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Whips

American Whip Co.:	Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving		$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone		....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whalebone		....	....	11.00	12.00	13.00	15.00	....	....
American Standard		8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center		6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors		....	....	....	6.00	...	....	....	....
Americus, 93 Pen Whip		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106		....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103		....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....
Hardware Assortment, 10/American, 75 Whips for $50.00. ℔ gro. $2.50@$12.00

Wire and Wire Goods—

Iron—

Market,
Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18. 70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd, Nos. 16 to 18. 80%
Bright and Ann'd, Nos. 19 to 26. 80&5%
Br. and Ann'd, Nos. 27 to 36. 82½&5%
Tinned. 65&10%

Extra 10% often given.

Tinned Broom Wire, 18 to 21, ℔....4¾¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.....60@70¢ ℔

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85@85&10%

Wire Cloth and Netting—

Painted Screen Cloth.....
Galvanized Wire Netting.....75@75&10%

Wire, Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination.....40%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....50%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....℔ doz., $4.00, 40%
Webster's Pat. Combination.....35%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, Jan. 2, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1893 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	50
Linseed, City, boiled	..	@	53
Linseed, Western, raw	..	@	50
Lard, City, Extra Winter	82	@	84
Lard, City, Prime	80	@	82½
Lard, City, Extra No. 1	70	@	..
Lard, City, No. 1	60	@	..
Lard, Western, prime	80	@	82
Cotton-seed, Crude, prime	42	@	..
Cotton-seed, Crude, off grades	38	@	40
Cotton-seed, Summer Yellow, prime	45	@	..
Cotton-seed, Summer Yellow, off grades	40	@	43
Sperm, Crude	..	@	97½
Sperm, Natural Spring	..	@	..
Sperm, Bleached Spring	..	@	..
Sperm, Natural Winter	1.00	@1.03	
Sperm, Bleached Winter	1.05	@1.08	
Whale, Crude	..	@	..
Whale, Natural Winter	55	@	56
Whale, Bleached Winter	..	@	58
Whale, Extra Bleached	59	@	60
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	40	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	42	@	43
Menhaden, Bleached W'ter	45	@	..
Menhaden, Extra Bleached	48	@	..
Tallow, City, prime	60	@	65
Tallow, Western, prime	..	@	60
Cocoanut, Ceylon	6¼	@	6½
Cocoanut, Cochin	7¼	@	7⅝
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified	5½	@	6
Bank.....per gal	40	@	41
Straits	41	@	42
Olive, Italian, bbls	63	@	65
Neatsfoot, prime	80	@	90
Palm, prime, Lagos	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder, light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@24.00	
Barytes, Amer. floated	29.00	@32.00	
Barytes, Amer. No. 1	16.00	@18.00	
Barytes, Amer. No. 2	13.00	@15.00	
Barytes, Amer. No. 3	11.00	@12.00	
Blue, Celestial	℔	6	@ 8
Blue, Chinese		40	@ 50
Blue, Prussian		25	@ 40
Blue, Ultramarine		8	@ 25
Brown, Spanish		½	@ 1
Brown, Vandyke, Amer		3	@ 3½
Brown, Vandyke, English		6	@ 8
Carmine, No. 40, in bulk		2.75	@ ..
Carmine, No. 40, in boxes or barrels		2.85	@ ..
Carmine, No. 40, in ounce bottles		3.75	@ ..
Chalk, in bulk	℔ ton	....	@ 2.25
Chalk, in bbls.	℔ 100 ℔	33	@ 40
China Clay, English	℔ ton	13.00	@18.00
Cobalt Oxide, prep'd		9.00	@11.00
Cobalt Oxide, black, lots 100 ℔		1.90	@ ....
Cobalt Oxide, black, less 100 ℔		1.96	@ ....
Green, Paris, in bulk		10	@ 10½
Green, Paris, 170 @ 175 ℔ kegs		10½	@ 11
Green, Paris, small pack		12	@ 17
Green, Chrome, ordinary		6	@ 12
Green, Chrome, pure		22	@ 25
Lead, Eng., B.B. white		8½	@ 10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔		7	@ 7¼
Kegs, lots 500 ℔ to 5 tons		6½	@ 6¾
Kegs, lots 5 tons to 12 tons		6⅜	@ 6⅝
Kegs, lots 12 tons and over		6¼	@ 6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price		..	@ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		..	@ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price		..	@ 2½
Lead, Red, bbls. and ½ bbls		6	@ ..
Lead, Red, kegs		6¼	@ 7¼
Litharge, kegs		6¼	@ 7¼
Litharge, bbls. and ½ bbls		6	@ 7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed		1½	@ 2½
Ocher, German Washed		1¼	@ 3
Ocher, American		½	@ 1½
Orange Mineral, English		8½	@ 9
Orange Mineral, French		10	@ 10½
Orange Mineral, German		8½	@ 9
Orange Mineral, American		8¼	@ 8¾
Paris White, English Cliff stone		1.00	@1.15
Paris White, American		65	@ 75
Red, Indian, English		5½	@ 7
Red, Indian, American		2	@ 6½
Red, Turkey		9	@ 14
Red, Tuscan		9	@ 11
Red, Venetian, American ℔ 100 ℔		1.00	@1.10
Red, Venetian, English		1.20	@1.35
Sienna, Italian, Burnt and Powd.	℔	4	@ 5
Sienna, Ital., Burnt Lumps		1½	@ 3½
Sienna, Ital., Raw, Powd		4½	@ 5½
Sienna, Ital., Raw, Lumps		1¾	@ 3½
Sienna, American, Raw		1½	@ 1¾
Sienna, American, Burnt and Powdered	℔	1½	@ 1¾
Talc, French			@ 1½
Talc, American		1¼	@ 1½
Terra Alba, Fr'ch. ℔ 100 ℔		95	@1.25
Terra Alba, English		70	@ 80
Terra Alba, American No. 1		65	@ 75
Terra Alba, American No. 2		45	@ 50
Umber, Turkey, Burnt and Powdered	℔	3½	@ 4
Umber, Turkey Bnt. Ln		2¾	@ 3
Umber, Turkey, Raw and Powdered		3¼	@ ....
Umber, Turkey, R'w Lumps		2¼	@ 2¾
Umber, Turkey, Bnt. Amer		1¼	@ 1½
Umber, Turkey, R'w Amer		1¼	@ 1½
Yellow, Chrome		10	@ 25
Vermilion, American Lead		11¼	@ 12
Vermilion, Quicks'er, bulk		57	@ ..
Vermilion, Quicks'er, bags		58	@ ..
Vermilion, Quicksilver sm'r pkgs		62	@ ..
Vermilion, English Import		85	@ 90
Vermilion, Imitation, Eng		8	@ 35
Vermilion, Trieste		90	@ 92½
Vermilion, Chinese		92½	@ 95
Whiting Common, ℔ 100 ℔		37½	@ 42½
Whiting Gilders'		45	@ 55

Zinc, American, dry	℔	4¼	@ ..
Zinc, French, Red Seal		7½	@ .
Zinc, Frech, Green Seal		9	@ ..
Zinc, Frech, V. M. X		..	@ 7
Zinc, Antwerp, Red Seal		7½	@ ..
Zinc, Antwerp, Green Seal		7¾	@ ..
Zinc, German, L. Z. O		6¾	@ 7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over		10¾	@ 11¼
lots less than one ton		11	@ 11¾
Zinc, V. M. in Poppy Oil, Red Seal		..	@ ..
lots of 1 ton and over		10	@ 10½
lots of less than 1 ton		10½	@ 10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1⅞; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	18
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18¼
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01¾@	.01¾	
In tubs	.01¾@	.01¾	
In tin cans	.01¾@	.02¼	
In bladders	.01⅞@	.02¼	

Spirits Turpentine—

In regular bbls	34½	@	..
In machine bbls	35	@	..

Glue—

Low Grade	℔	8	@ 10
Cabinet		12	@ 14
Medium White		13	@ 15
Extra White		17	@ 20
French		10	@ 22
English		10	@ 15
Irish		12	@ ..

Freeze The Quickest And Run The Easiest

All Inside Parts Tinned.

Cedar Tubs.

Have More New Patented Improvements Than Other Freezers

Extra Strong



SHEPARD'S LIGHTNING FREEZERS

MORE ICE CREAM, PLEASE.

Shepard Hdw Co.
Buffalo, N.Y.
Sole Makers

Pacific Coast Representatives, CHAS. L. PIERCE & CO., 202 Market St., San Francisco, Cal.
Canadian Representative, H. D. SIMMONS, 85 York St., Toronto, Ont.

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CURRENT METAL PRICES.

APRIL 26, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:
¼ to 2 in. round and square.. } ₩ lb 1.80 @ 1.90¢
1 to 6 in. x ⅜ to 1 in... ..... }
Refined Iron:
¼ to 2 in. round and square. }
1 to 4 in. x ⅜ to 1½ in.... ... } ₩ lb 1.90 @ 2.00¢
4½ to 6 in. x ⅜ to 1 in. .... }
1 to 6 in. x ¼ and 5-16..... ₩ lb 2.10 @ 2.20¢
Rods—⅜ and 11-16 round and sq. ₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12.... ₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price. ₩ lb.... ...3.00¢
Burden's "H. B. & S." Iron, base price..... ..... ₩ lb.. .....2.80¢
"Ulster"..... .... ₩ lb.....3.00¢
Norway Bars... .... 3.75 @ 4.00¢
Norway Shapes... ..... 4.50 @ 5.00¢

Merchant Steel from Store—

Per lb

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots..... .. .. 2½¢
Best Cast Steel, base price in small lots. 8 ¢
Best Cast Steel Machinery, base price in small lots .... 5 ¢

Sheet Iron from Store—

Black—

	Common American.	R. G. Cleaned American.
Nos. 10 to 16.... ...₩ lb	2¾ @	3½¢
17 to 20.....₩ lb	3 @ ...	3⅝¢
21 to 24.....₩ lb	3¼ @	3⅝¢
25 and 26. ...₩ lb	3⅝ @ ...	3¾¢
27.... .....₩ lb	3½ @	3⅞¢
28.....₩ lb	3⅝ @	4 ¢

American B. B..... .....₩ lb 4¢ @ 4½¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 12¢ @ 13¢
Patent Planished .....₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel.....₩ lb, 8½¢

Galvanized.

	B. B.
Nos. 10 to 16..... .....₩ lb	4.20¢
17 to 22.... ....₩ lb	4½¢
23 to 24.....₩ lb	4¾¢
25 to 26.. ....₩ lb	5 ¢
27..... .....₩ lb	5½¢
28 .. ..₩ lb	5½¢
29 to 30..... .....₩ lb	6½¢

English Steel from Store—

Best Cast..... .....₩ lb 15 ¢
Extra Cast..... .....₩ lb 16½ @ 17 ¢
Swaged, Cast..... .....₩ lb 16 ¢
Best Double Shear .....₩ lb 15 ¢
Blister, 1st quality..... .....₩ lb 12 ¢
German Steel, Best.....₩ lb 10 ¢
2d quality.. .....₩ lb 9 ¢
3d quality..... .....₩ lb 8 ¢
Sheet Cast Steel, 1st quality..... ....₩ lb 15 ¢
2d quality.. .. ..₩ lb 14 ¢
3d quality.... .....₩ lb 12½¢
R. Mushet's "Special".. .....₩ lb 48 ¢
" " Annealed.....₩ lb 75 ¢
" "Titanic" ....₩ lb 20 ¢

METALS—

Tin—

Per lb

Banca, Pigs..... ..... 22 ¢
Straits, Pigs..... ..... 21½¢
Straits in Bars.. .... 23 ¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade. IC, 10 x14.. @ $6.50
" " " IC, 12 x12.. @ 6.75
" " " IC, 14 x20.. @ 6.50
" " " IC, 20 x28.. @ 13.00
" " " IX, 10 x14.. @ 8.50
" " " IX, 12 x12.. @ 8.75
" " " IX, 14 x20.. @ 8.50
" " " IX, 20 x28.. @ 17.00
" " " DC, 12½x17.. @ 6.00
" " " DX 12½x17.. @ 8.00
Allaway Grade..... ...IC, 10 x14.. @ 6.00
" " .....IC, 12 x12.. @ 6.25
" " .....IC, 14 x20.. @ 6.00
" " .....IC, 20 x28.. @ 12.00
" " .....IX, 10 x14.. @ 7.50
" " .....IX, 12 x12.. @ 7.75
" " .....IX, 14 x20.. @ 7.50
" " .....IX, 20 x28.. @ 15.00
" " .....DC, 12½x17. @ 5.50
" " ..... DX, 12½x17.. @ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20.. $5.50 @ $5.60
10 x 20.. .... @ 8.50
20 x 28.. 11.50 @ 12.00
IX, 10 x 14, 14 x 20.. .... @ 7.00
BV Grade.—IC, 10 x 14, 14 x 20.. .... @ 5.60

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20..... .... @ $5.65
20 x 28..... . . . @ 11.00
IX, 14 x 20..... .... @ 6.40
20 x 28..... .... @ 12.80
Abecarne Grade.—IC, 14 x 20... .. @ 5.55
20 x 28.... .... @ 10 80
IX 14 x 20.... .... @ 6 40
20 x 28.... .... @ 12.80

Tin Boiler Plates—

XX, 4x 26.....112 sheets. .... @ $18.35
IXX, 14 x 28.....112 sheets.... .... @ 14.50
IXX, 14 x 31.....112 sheets .... @ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20..... ....$6.25
IC, 20 x 28..... ....12.50
IX, 14 x 20..... ....7.25
IX 20 x 14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake.. .. @ 12 ¢
Ansonia grade Arizona..... .. @ 11½¢
Ansonia grade Casting..... .. @ 11 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per sq. foot and prices per pound.							
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	..	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, per pound..... 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

Per lb.

14 ounce to square foot and heavier..... 26¢
12 ounce and up to 14 ounce to square foot... 27¢
10 ounce and up to 12 ounce..... 29¢
Lighter than 10 ounce..... 32¢
Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned..... ₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each ..... 8¢
Tinning sheets on one side, 30 x 60 each..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each ..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier. ....24¢ ₩ lb
14 oz..... .....25¢ ₩ lb
12 oz. ....27¢ ₩ lb

Seamless Brass Tubes—

July 6, 1892. Net.

O. G.	N. G.	⅝	½	⅜	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Above 5-16 inch to 3 inch, inclusive..... 35¢
Plain, above 3 inch..... 45¢
Plain, 5-16 inch..... 45¢
Plain, ¼ inch..... 60¢
Plain, 3-16 inch $1.00
Plain, ⅛ inch..... $1.50
Fancy Tubing, Brass, to No. 20, inclusive..... 43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.
Discount from list..... 30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive..	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive.....	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20.....	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22.....	$0.26	$0.28	$0.30	$0.34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26.....	.35	.37	.39	.43
No. 27.....	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.57
No. 31.....	.51	.53	.55	.62
No. 32.....	.55	.57	.59	.73
No. 33.....	.59	.61	.63	.82
No. 34.....	.64	.66	.68	.95
No. 35.....	.70	.72	.74	1.30
No. 36.....	.76	.78	.80	1.50
No. 37.....	1.00	1.02	1.04	1.70
No. 38.....	1.30	1.32	1.34	2.00
No. 39.....	2.00	2.02	.00	3.25
No. 40.....	2.60	2.62	.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

Per lb.		Per lb
No. 5.....	.49¢	No. 11..... .....56¢
No. 6.....	.49¢	No. 12..... .....58¢
No. 7.....	.49¢	No. 13..... .....60¢
No. 8.....	.50¢	No. 14..... .....65¢
No. 9.....	.52¢	No. 15..... .....70¢
No. 10.....	.54¢	

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive..... .....17¢ ₩ lb
Over 3½ to 5 inches inclusive..... .....18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive..... .....18¢ ₩ lb
Over 3½ to 5 inches inclusive ....19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.
Western Spelter..... .....5¢@5¼ ¢
Bertha (pure)..... .....8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.
600 lb casks .... 6¾¢
Per lb..... ... 7 ¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.
American Pig..... .....4½¢
Bar ....4¾¢
Pipe, subject to discount 20%..... .....6½¢
Tin-Lined Pipe, subject to discount 20%.... 11¢
Block Tin Pipe, subject to discount 20%.....37½¢
Sheet, subject to discount 20%..... .....7¢
Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½ (Guaranteed).....13½¢ @ 15¢
No. 1 .....11¾¢ @ 12½¢
Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson .... ₩ lb 11½¢
Hallett's .. .. " 10¾¢@1 ¢

Aluminum—

Duty: 15¢ ₩ lb.
No. 2 grade metal, in ton lots..... ₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots ..... ₩ lb .90
Lots less than 1 ton .....10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper..... ₩ lb 9½¢
Light and Tinned Copper ..... ₩ lb 8½¢
Heavy Brass..... ₩ lb 7 ¢
Light Brass..... ₩ lb 6 ¢
Lead ..... ₩ lb 3½¢
Tea Lead..... ₩ lb 3½¢
Zinc. ..... ₩ lb 2½¢
No. 1 Pewter..... ₩ lb 14 ¢
No. 2 Pewter..... ₩ lb 7 ¢
Wrought Scrap Iron..... ₩ gross ton $13.00
Heavy Cast Scrap..... ₩ gross ton 9.00
Stove Plate Scrap..... ₩ gross ton 6 00
Burnt Iron ....₩ gross ton 4.0

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